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LOOKING AHEAD
. . . with the Editor

WITH a more thorough understanding of personnel problems and realization that off-the-job accidents were taking a heavy toll, it became apparent to a few pioneers in the safety field that an eight-hour accident prevention program was inadequate. To be really effective, safety had to be put on a 24-hour basis, for the employe's safety beyond the gates of the plant, off the lease or outside the office was just as important as while he was working.

How one large company extended its safety program beyond the job, into the family and into the daily routine of living, and the valuable results of such efforts, will be interestingly discussed in "Around-the-Clock Accident Prevention" by C. O. Strahley, manager of the Personnel Department of The Texas Company, to be published next week.

☆

The Oil Man's Calendar

May 10–15	National Fire Protective Association, Palmer House, Chicago, Illinois.
20–21	A.P.I. Mid-Continent Section, Production Division, Tulsa.
24–25	Joint Production and Chemical Committee Conference, Sponsored by Technical Section of American Gas Association, Hotel Pennsylvania, New York.

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WAR SERVICE BRINGS OUT *its* EXTRA CAPACITY

The general superintendent of a plant now on war work remarked to one of our representatives:

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The Changing Panorama

OPA Unnecessarily Duplicates PAW

ACTION of OPA in denying the crude-price increase recommended by PAW calls attention anew to the serious danger of divided and conflicting powers exercised over the oil industry in directing it through wartime difficulties.

PAW, the specialized agency which best understands the heavy war responsibilities of the industry, officially went on record as favoring a 35-cent crude price advance, as essential to assuring continued adequate supply for fighting this war, which will require enormous quantities.

OPA, involved in a multitude of matters in all lines of the general economy, and with necessarily limited conception of the complicated workings of the oil industry, had the final discretion, however; and basing its decision on data quite unacceptable to oil men, it ruled out the recommended price revision.

This action of blocking a measure regarded by the petroleum administrator as essential in waging the war raises again the question of whether such important power should be left in the hands of OPA.

The criticism is raised that OPA's petroleum section of the fuel price division, which guides the price administrator in regard to control of prices of oils, represents an unnecessary, inefficient, and inexcusable duplication of governmental effort, not only using up manpower and public money that cannot be afforded, but also standing in the way of prompt decisions on oil-industry petitions for compensatory adjustments deemed necessary.

PAW is an elaborate and expensive organization for the study of the physical operations, financial results, and all other matters pertaining to the petroleum industry. It is unique among the war agencies; and the petroleum industry is unique in having this governmental agency study its affairs and interpose between it and OPA. PAW gives serious and prolonged consideration to reserves, production, and in general, the ability of the industry to supply the needs of the armed forces, industry, and the civilian population. It was against this broad background that the agency officially recommended upward revision of crude-oil prices.

With PAW doing this complete job, there is no reason to duplicate any part of its work in another agency.

Of course, OPA is not duplicating all of PAW's work. But it does think it necessary to do a lot of duplicatory work when petitions for price increases are an issue, insisting upon exercising its own individual judgments, even though it seems that the studies and judgments of the well-qualified PAW should satisfy the government's needs.

It is readily understood that OPA should make its own studies of other industries when such studies are necessary to its conclusions. But the other industries do not have between them and OPA an organization like PAW.

It is understood, also, that OPA should make general studies of the way price increases in one industry, say the oil industry, affect the entire price control program and the general economy. But this is quite a different matter from determining whether the industry should receive a price increase at all, and if so, how much. Certainly, under the present set-up, this would appear to be the proper task of PAW.

In petroleum matters OPA should confine its efforts to fitting petroleum into the rest of the economy.

Critical Shortage of Tubular Goods Likely

THE producing branch will shortly face a most critical shortage of casing and tubing that likely will force curtailing of drilling.

The industry has gotten on well to date by living off large inventories of tubular goods it accumulated during 1941, but much of this "fat" has been used and pickings are going to get very lean in the future. During the 12 months ended last March the industry drilled approximately 18,000 wells, which consumed more than 1 million tons of pipe. During this same period, shipments of new tubular goods from mills were slightly less than 120,000 tons. Thus the industry used about 900,000 tons from its tubular goods inventories. It cannot continue to do this, as stocks are reaching low levels.

To drill the 16,000 wells asked for by PAW during 1943, approximately 965,000 tons of steel will be required, but during the first quarter only 77,000 tons were delivered or at a rate of but 308,000 tons for the year. With stocks getting low where will the industry obtain the more than 600,000 additional tons?

It is going to be difficult to obtain larger allotments of tubular goods for the industry. In the first place the quantity of steel being made is not sufficient to meet all demands. The 16 claimant agencies, of which PAW is one, have filed total requests for about 21 million tons of finished carbon steel for the third quarter, but only about 15 million tons will be available. Consequently WPB's steel division has recommended that the War Department's requests be cut about 14 percent, the Navy about 20 percent, the Maritime Commission 22 percent, Lend-Lease Administration 32 percent, and 40 percent in the Office of Defense Transportation. This makes it difficult for any other group to obtain higher allocations. In the second place, tubular goods are especially hard hit because these mill facilities are covered up making bomb and shell casings.

Oil Is Ammunition

Oil is more surely a war product, and a more important one than steel, guns, armament, or explosives. As much the most important single product necessary to winning the war, oil must be furnished to our armed forces, and our war industries, according to their needs, irrespective of individual inequalities, irrespective of cost, and largely, irrespective of strict conservation.—JUDGE WILLIAM P. COLE, JR., *former member of the House of Representatives from Maryland.*

Subsidies Not Wanted

IT DOES not take a poll of oil operators throughout the United States to determine what they think about Prentiss Brown's proposal to substitute government subsidies on wildcat drilling for a crude-price increase. THE OIL WEEKLY of April 5 published the results of a questionnaire to operators on what is needed to stimulate wildcat operations, and subsidies were accorded practically no showing at all. The daily newspapers in the oil country on the two days following the Brown statement carried interviews with operators in which his idea generally was termed absurd.

Several operators have hinted to us that Mr. Brown's operation of OPA leaves so much to be desired that his advice on other subjects rates little consideration.

OPA Wildcat Subsidy Plan Highly Undesirable

Besides creating additional red tape, putting government in oil business in big way and letting it dictate when and where wildcats would be drilled, plan would place tax of such size on wells finding production that majority would be made unprofitable and industry would pay back more than it received

By WARREN L. BAKER, Editor

THE industry's wildcat campaign, so greatly needed to assure an adequate supply of the most vital of all commodities, has been dealt a severe blow by OPA's denial of higher crude oil prices. With hope high that crude price ceilings would soon be permitted to rise, there have been definite signs of growing wildcat activity in recent months. Now that OPA has denied the request for higher crude prices, a falling off in the upward swing might easily result. The fact that OPA proposes government financial aid to wildcat drilling is not likely to help the situation, and may even retard wildcat activity further.

Regardless of what becomes of the subsidy proposal, OPA has created a condition that is certain to cause immediate confusion in the minds of oil men as to the probable future prospects of the industry. Naturally wildcatters will not be inclined to be active in one of the most hazardous types of enterprises under such conditions.

For several logical reasons the oil industry wants no part in the OPA subsidy plan that has been proposed, and is likely to fight it just as hard as it will continue to try to obtain a price increase.

In the first place, from a general overall industry viewpoint the OPA plan can hardly be called a government subsidy. It appears that the industry actually would be footing the bill, and not the government. The proposal is that the government will advance two thirds of only the actual drilling cost, which would be written off in case the well proved dry; however, should the well prove commercial the operator would have to either give the government a one fourth override interest on production or choose to liquidate whatever amount had been advanced at the rate of $7 for every $1 loaned him.

Under this plan, the government might have advanced the industry $155 million during 1942 if every one of the 3100 wildcats completed had obtained subsidy aid amounting to $50,000 each, which is the figure OPA uses. However, if the owners of the 500 wildcats that proved productive had selected to liquidate at the $7 for $1 rate the $25 million advanced them on the wells that found production, they would have paid the government $175 million. Thus the government would realize a net profit of $20 million from what it calls a subsidy. Is this a government subsidy? Who would be subsidizing who? From an individual standpoint there might be some relief from dry-hole expense, but actually the more efficient or successful operators who discovered oil would be paying for the dry holes of other operators. The industry would be subsidizing itself.

On the other hand if owners selected to give the government a one fourth overriding interest in the total amount recovered from each of the 500 producing wildcats completed during 1942 they would be assuming an obligation of such proportion that many of the wells and even leases would prove unprofitable. Still using the OPA figure of an average subsidy of $50,000 for each wildcat, any well that produced more than 200,000 barrels during its lifetime would pay back more than it received. On the liquidation basis, each wildcat that received $50,000 from the government would return $350,000. It must be remembered that many of the productive wildcats are not actually profitable today. The additional obligation of a quarter overriding interest or a $7-to-$1 liquidation rate would throw most of them, except a few top ranking ones, onto the red side of the ledger.

Thus only encouragement to drill dry holes would come from the proposed subsidy plan, and a tax would be placed upon the finding of oil. This is not the way to handle the situation when it is reserves that are being sought and not wasteful expenditure of steel, manpower and money. For these reasons, financially able concerns will prefer to spend their own money, leaving only the less favorable prospects dependent on government help.

In addition, the subsidy to dry holes would not be a very large part of the full cost of wildcatting. OPA proposes to advance only two thirds of the actual expense of drilling the hole. This is not the most expensive portion of the cost of a modern wildcat by a wide margin. By the time geological and geophysical work, leasing, etc., are out of the way, drilling probably does not amount to more than one third of the cost of a wildcat, and frequently will be a much smaller percent. Thus, even from the individual viewpoint of a dry-hole completion the subsidy plan OPA proposes is not so favorable as would seem at first appearance.

Moreover, if owners selected to give the government a one fourth overriding interest in the 500 producing wildcats, the government would be in the oil business in a big way in a short time. Only one oil company drilled 500 wells during 1942. A quarter interest in 500 wells annually, scattered throughout the nation and each in a different field, would soon make the government a most powerful factor in the industry's operations.

Under the government financial assistance program additional red tape and delays would occur before an application for the drilling of a well could obtain approval. There are enough obstacles in the way now without adding more, and oil men will not cherish additional ones. Before the government could grant financial aid, it would be necessary for it to obtain expert opinion on the merits of any proposed wildcats. Such decisions probably would be slow. Furthermore, the plan would necessitate turning over to the government valuable and highly confidential geological and geophysical data; something oil men will not relish.

And finally, under the proposed setup the government would come near to dictating when and where many wildcat tests would be drilled.

Discovery Rate Continues Below Wartime Needs

Wildcatting results show some improvement in quality, but rate of completing indicates goal unlikely to be attained

By L. J. LOGAN, Associate Editor

WILDCATTING results of April were comparable with those of March, the number of tests completed and number of discoveries having fallen short of aims of the Petroleum Administration for War, which has asked for above normal prospecting; although ultimate production from fields discovered may approximate the amount of oil taken from the ground during the month, judging by preliminary ratings of importance of the new fields.

While discoveries thus were not greatly disappointing from the long range standpoint, with a month's findings perhaps equaling the month's draft on established reserves, the results were disappointing from the present, urgent, wartime necessity standpoint. For PAW, analyzing the nation's needs, has conceived in its wildcatting goals the necessity of faster than normal building up of reserves, in order to maintain or build up at the same time the current oil producing ability of the country, to assure capacity to meet heavy military and civilian requirements.

The United States in recent years has been using around 1½ billion barrels of petroleum per year or 125 million barrels per month, and therefore to stay on balance must be finding 125 million barrels monthly (while also carrying on normal development of undeveloped fields). Merely from this standpoint of completing the discovery wells of fields that ultimately should produce 125 million barrels, the industry in April perhaps succeeded, as rough estimates indicate that the April discoveries ultimately may yield as much as 150 million barrels when fully developed, by taking an optimistic view, although minimum or definitely conservative estimates, verg-

Trends of Wildcat Completions

ITEM	March 1943	April 1943	January-April 1942	January-April 1943	% Diff.
Including Semi-Wildcats:					
Total Completions	248	241	*	975	.....
Productive: Total	43	46	*	170	.....
Percent	17.3	19.0	*	17.4	.....
Dry: Total	205	195	*	805	.....
Percent	82.7	81.0	*	82.6	.....
Excluding Semi-Wildcats and Extensions:					
Total Completions	225	218	958	903	— 5.5
Productive: Total	34	27	178	128	—28.0
Percent	15.1	12.3	18.5	14.1	.....
Dry: Total	191	191	780	775	— 0.6
Percent	84.9	87.7	81.5	85.9	.....
Discoveries:					
Oil New Fields	18	18	101	89	—11.8
New Pays	7	6	57	18	—68.4
Extensions	9	17	*	36	.....
Distillate: New Fields	5	.....	4	6	+50.0
New Pays	.....	.....	1	.....	.....
Extensions	.....	1	*	4	.....
Gas: New Fields	4	3	11	14	+27.2
New Pays	.....	.....	4	1	—75.0
Extensions	.....	1	*	2	.....

* Data on semi-wildcats not available for 1942.

Results of Wildcatting in United States During April and to Date for Year

This report embraces approximately one full month's wildcatting, although not exact results for calendar month. It includes some wells completed in late March but omits some completed in late April.

STATE OR DISTRICT	MONTHLY WILDCAT COMPLETIONS: Details for April, 1943: Productive: New Fields *Oil	New Fields Gas	New Pays *Oil	New Pays Gas	Extensions *Oil	Extensions Gas	Unproductive: Wildcats	Unproductive: ‡Semi-Wildcats	Total Wildcats: April, 1943	Total Wildcats: Mar., 1943	Total Wildcats: †April, 1942	CUMULATIVE WILDCAT COMPLETIONS: FIRST 4 MONTHS: Details for January-April, 1943: Productive: New Fields *Oil	New Fields Gas	New Pays *Oil	New Pays Gas	Extensions *Oil	Extensions Gas	Unproductive: Wildcats	Unproductive: ‡Semi-Wildcats	Total Wildcats Jan.-April, 1943	Total Wildcats Except Extensions or Semi-Wildcat Tests: Total 1943	Total 1942	Production 1943	Production 1942
Alabama	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Arkansas	.....	.....	.....	.....	1	1	3	.....	5	7	3	1	.....	3	.....	2	1	9	1	17	13	8	4	4
California	.....	2	.....	.....	.....	.....	15	.....	17	23	11	1	2	1	.....	2	1	66	.....	73	70	30	4	1
Colorado	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Illinois	2	.....	3	.....	1	.....	28	.....	34	36	42	17	1	3	.....	10	.....	104	.....	135	125	152	21	20
Indiana	.....	.....	.....	.....	2	.....	4	.....	6	7	7	2	.....	.....	.....	3	.....	28	.....	33	30	15	2	8
Kansas	2	.....	.....	.....	2	.....	29	.....	33	28	24	14	.....	1	.....	2	.....	113	3	133	128	110	15	19
Kentucky	.....	.....	.....	.....	.....	.....	1	.....	1	9	3	2	.....	.....	.....	.....	.....	12	.....	14	14	3	2	.....
Louisiana	2	.....	.....	.....	2	.....	6	.....	10	9	11	6	1	2	.....	2	.....	26	3	40	35	62	9	16
North Louisiana	.....	.....	.....	.....	1	.....	6	.....	7	4	4	.....	1	.....	.....	1	.....	20	2	24	21	30	1	2
South Louisiana	2	.....	.....	.....	1	.....	.....	.....	3	5	7	6	.....	2	.....	1	.....	6	1	16	14	32	8	14
Michigan	2	.....	.....	.....	.....	.....	13	1	16	15	11	6	2	.....	.....	1	.....	45	5	59	53	50	8	3
Mississippi	.....	.....	.....	.....	.....	.....	1	.....	1	1	2	1	.....	.....	.....	.....	.....	6	.....	7	7	11	1	.....
Missouri	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	2	2	.....	1	.....
Montana	.....	.....	.....	.....	1	.....	1	.....	2	.....	.....	.....	.....	.....	.....	1	.....	1	.....	2	1	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....
New Mexico	.....	.....	.....	.....	.....	.....	7	.....	7	4	1	.....	.....	.....	.....	.....	.....	22	.....	22	22	11	.....	4
Oklahoma	4	.....	.....	.....	2	.....	21	.....	27	21	23	12	2	.....	.....	5	.....	91	1	111	105	87	14	21
Texas	5	1	2	.....	6	.....	61	3	78	97	98	31	6	7	1	11	.....	248	17	321	293	405	45	79
East Tex. Border Co.'s	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	2	.....	1
Rest of East Texas	2	.....	.....	.....	.....	.....	7	.....	9	4	6	2	1	.....	.....	.....	.....	21	1	25	24	37	3	1
North Texas	.....	.....	1	.....	.....	.....	17	.....	18	21	24	8	.....	3	.....	.....	.....	63	2	76	74	80	11	12
West Central Texas	.....	.....	1	.....	.....	.....	8	.....	9	8	5	3	2	1	.....	.....	.....	26	1	33	32	50	6	10
West Texas	.....	.....	.....	.....	.....	.....	5	.....	5	9	9	2	1	.....	.....	1	.....	19	1	24	22	49	3	10
Texas Panhandle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....
Gulf Coast, Upper	2	.....	.....	.....	3	.....	3	.....	8	8	8	4	.....	1	.....	5	.....	16	1	27	21	36	5	13
Gulf Coast, Lower	.....	.....	.....	.....	2	.....	3	1	6	23	21	8	1	2	1	3	.....	31	6	52	43	65	12	23
Southwest Texas	1	1	.....	.....	1	.....	11	2	16	18	20	4	1	.....	.....	2	.....	48	5	60	53	65	5	7
South Central Texas	.....	.....	.....	.....	.....	.....	6	.....	6	5	5	.....	.....	.....	.....	.....	.....	22	.....	22	22	21	.....	2
Wyoming	1	.....	1	.....	1	.....	1	.....	4	.....	.....	1	.....	1	.....	1	.....	2	.....	5	4	4	2	3
Total United States	18	3	6	.....	18	1	191	4	241	258	242	95	14	18	1	40	2	775	30	975	903	958	128	178

* Distillate included with oil discoveries. † Exclusive of semi-wildcat or extension tests. ‡ Extension tests.

New Oil and Gas Fields, New Pay Horizons and Extension Discoveries in the United States During April, 1943

This report embraces approximately one full month's discoveries, although not exact results for calendar month. It includes some wells completed in late March but omits some completed in late April.

County	Field	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	†Name, Character and Age of Producing Formation	*Initial Production, Method, and Choke	Gravity of Oil	Type of Structure	Method of Discovery	Preliminary Estimates of Reserves Found; Remarks
		ARKANSAS—Oil Field Extension										
Union	New London	Arkhill Oil Co.'s Union Saw Mill 1, sw sw 17-18s-12w	3- 8-43	4- 9-43	3024	2190	Nacatoch sand, U. Cret.	P 30	20	Terrace	Subsurface	3 mi w extension; small area; pumping prod.
		ARKANSAS—Gas Field Extension										
Union	Champagnolle	Sam Richardson's Graves et al No. 1	4- 5-43	4-28-43	3300	2927–2928	Tokio sand, U. Cret.	F 25 mil.; ¼"		Terrace	Subsurface	Minor exten. (6 wells?) in old lenticular field.
		CALIFORNIA—New Gas Fields										
Madera	Mendota	Texas Co.'s G 11 38-16, 4950' s 1650' e nwc 16-31-16	12- 2-42	4- 1-43	9154	4419–4485	Sand, Eocene	F 11 mil.; 8/64"		Faulted Anticline	Geophysics	May be extensive field (perhaps gas-distillate).
San Joaquin	Lodi	Amerada-Bankline Oil Co.-Honolulu Oil Corp.'s Lodi Community 9-1, 336' s 331' e c 9-4-7.	2-22-43	4- 3-43	4471	2240–2270	Sand, Eocene	F 5.3 mil.; 5/8"			Geophysics	Shallow field; probably mediocre.
		ILLINOIS—New Oil Fields										
Franklin	W. Frankfort, South	E. S. Adkins-Brown Est. No. 1, se ne nw 25-7s-2e, 1½ mi. s of W. Frankfort pool.		4- 6-43	2875	2756–2774	Levias lime, L. Miss.	P 182	37.4			Absence of water and fair I.P. indicate possible fairly good field. May connect with W. Frankfort pool 1½ mi to n.
Lawrence	Beman	J. Bauer's Arkansas Trust 1, nw ne nw 24-3n-11w, 3½ mi. e of Old Lawrence pool.	7-15-42	10- 6-42	1843	1837–1843	McClosky lime, L. Miss.	P 8				First well comp. last yr but field named 4-9-43 when further drlg promised small fld.
		ILLINOIS—Oil Field Extension										
Hamilton	Blairsville	Magnolia's R. Odell No. 1, E/2 ne se, 17-4s-7e	2-18-43	4-27-43	3490	3336–3346	Levias lime, L. Miss.	P 17				½ mi n extension; not important: small I.P., 25 bbls water daily.
		ILLINOIS—New Oil Pays										
Effingham	Mason S.	W. R. Braun's Tremble No. 1, nw nw sw 26-6n-5e	2-16-43	4- 6-43	2441	2433–2438	Rosiclare sand, L. Miss.	P 65	38.2			Fair initial production.
White	Calvin N.	W. C. McBride's H. L. Hon No. 1-A, ne nw ne 6-4s-14w	3- 5-43	4-20-43	2928	2330–2347	Tar Spgs. sd., U. Miss.	P 81				Fault 660 ft e this well limits prod. in all zones of field, but w limits of field not defined.
White	Phillipstown	Jarvis & Marcell's H. J. Garner No. 5, N/2 frac. sec. 31-4s-11e	1-30-43	4- 6-43	2436	1437–1500	Sand, Pennsylvanian	P 80	36.0			Several prod. wells promise fair output this shallow zone; although I.P.'s low, some wells free of water, and drlg is inexpensive.
		INDIANA—Oil Field Extensions										
Gibson	N. Owensville	Helmerich & Payne, Inc.'s Wm. & Lillie Scott No. 1, cnw se ¼ sec. 26 2s-12w.	3-19-43	4-11-43	2494	2480–2489	McCloskey li., L. Miss.	P 20				¾ mi. w-sw extension.
Gibson	Union-Bowman	Chester Oil Co.'s Geo. & Mary Shoultz No. 1, sw sw sw 16-1s-9w	4- 5-43	4-30-43	1289	1285–1289	Hardinsburg sand, Miss.	P 35				½ mi n-ne extension.
		KANSAS—New Oil Fields										
Rice		Mercury Drlg. Co.'s Ploog 1, nw nw sw 5-18s-9w		4-17-43	3244	3229–3244	Arbuckle lime, Ord.	P 78	46			Sm. area indicated and under 4,000 bbls acre.
Stafford		Phillips' Spangenberg 1, c. n½ ne se 21-22s-12w		4- -43	3697	3691–3697	Arbuckle lime, Ord.	P 228				Possible reserve 180,000 bbls. oil.
		KANSAS—Oil Field Extensions										
Russell	Gorham	Alva Phillips' Krug 1-A, ne ne sw 8-14s-14w		4- 1-43	3085	3042-3048 & 3078–3085	Lansing-KC lime, Penn.	F 64				Small area indicated.
Russell	Gustason	Harry Gore's Kastrup 1, nw nw nw 15-15s-12w		4-10-43	3027	2980–3027	Lansing lime, Penn.	P 203	36			Minor discovery; extends mediocre old area.
		NORTH LOUISIANA—Oil Field Extension										
Claiborne	Sugar Creek	Hassie Hunt's W. J. Byrd 1, se nw 17-19n-5w		4- 8-43	6265	5579–5588	Travis Peak, L. Cret.	F 672				3 mi se extension.
		SOUTH LOUISIANA—New Oil Field.										
Beauregard	Bear	General Crude's Baldwin 1, 990' fr w & 330' fr nl sec 27-6s-9w, nw Bear townsite.	2- 2-43	4- 3-43	9412	6512–6520	Frio sand; Olig.	F 151; 1/8"	43.6	Faulted	Geophysics	May yield 5 to 7½ million bbls; geophysics indicate several thousand ac., but sd. thin.
		SOUTH LOUISIANA—Oil Field Extension										
Evangeline	Ville Platte	Continental's Vidrine-Reed-Vidrine 1, 330' n&w of se cor sec 28-30-2e.	3- 6-43	4-13-43	10273	10148–10170	Wilcox sand; Eoc.	F 265; 1/32"	39.4		Subsurf. & drlg.	Area indefinite; sand conditions different from main fld; may add 2½ mil. bbls. res.
		SOUTH LOUISIANA—New Gas-distillate Field										
St. James	St. James (Vacherie)	Humble's Panno & Bossetta 1, fr most e'ly cor sec 8 go sw 2439' alg sel thence 831' nw at ra in sec 8-12s-16e	1-21-43	4-18-43	10895	10763–10780	Miocene sand; Mio.	F 96 & 2.5 mil.; 1/4"	Dist.	Faulted Anticline	Geophysics and Subsurface	Fairly rich sand may yield oil; could be 3 million bbl. field.
		MICHIGAN—New Oil Fields										
Gladwin	W. Beaverton	Sun's State A-1, e½ ne se 19-17n-2w, 4 mi nw S. Beaverton fld.	3-17-43	4-22-43	3911½	3841–3911½ 3896–3903	Dundee lime, Devo.	Sw 26	41.3	Anticline	Subsurf. & core drlg.	Small production in first well.
Van Buren	W. Bangor	Roung & Clark's Allers 1, sw se sw 5-2s-16w, 1½ mi w N. Bangor fld.	1-30-43	4-22-43	1045	1044–1045	Traverse lime, Devo.	Sw 16	31			Shallow field; unimpressive.
		MONTANA—Oil Field Extension										
Glacier	Cut Bank	The Texas Co.'s 1 fee-M-489		4-24-43				Sw 335				½ mi s extension.
		OKLAHOMA—New Oil Fields										
Creek		Sun's Frye 1, se se nw 10-14n-7e		4- 2-43	3375	2730–2752	Prue sand, Penn.	F 63; tubg.				May be related to Stroud extension shown below; possible recovery 6,000 bbls. per acre.
Lincoln		Stanolind's Leonard 1, sw sw sw 10-12n-2e		4- 2-43	5644	5636–5644	Wilcox sand, Ord.	F 384	37		Geophysics	Probably will be small field.
Oklahoma		Ace Gutowsky's Wagner 1, nw nw sw 32-14n-4w		4-18-43	7690	6945–6956	Hunton lime, Devo.	F 535; ¼"	41			W of Edmond pool; appears separate area; but more drlg. needed to gauge importance.
Osage		A. G. Oliphant's C. B. Peters Osage 1, ne ne sw 20-25n-3e		4-10-43	2875	2850–2875	Layton sand, Penn.	F 216				Expected to be fair but not large field.
		OKLAHOMA—Oil Field Extensions										
Creek	Stroud	John J. Fleet's Adams 1, se nw 8-14n-7e		4- 1-43	2874	2862–2874	Prue sand, Penn.	F 127				Likely to extend drlg toward Sun's Frye 1 discovery (see above).
Tillman	Frederick	Kerlyn Oil Co.'s Hinson 1, ne se se 33-2s-17w		4- 9-43	4818	2674–2962	Canyon & Cisco sds, Penn.	P 20				Pumped 6 bbls water, 20 bbls oil; unimportant.
		EAST TEXAS—New Oil Fields										
Franklin	New Hope	Tide Water-Seaboard's A. J. Bacon 1, 440' out nec 123-ac lse, blk 12, Jno. Maximillian sur, 4 mi n Scroggins.	1-14-43	4-26-43	8089	8089	Travis Peak sand, L. Cret.	F 209; 1/2"	47.3	Anticline	Geophysics	Important discovery; good flow, small choke, from 30 ft. oil sand; but restricted lease ownership presages slow development; single well reserve of 400,000 bbls.
Wood		Bobby Manziel's W. F. Bailey-Shell 1, 741' wel & 2196' snl of S. Burch sur, 4 mi se Coke fld.	2-21-43	4-24-43	6361	6244–6319	Paluxy sand, L. Cret.	F 248; ¼"	34	Anticline	Subsurf & Geophys.	May be linked with Quitman field 4¾ mi to sw, although 13 ft main pay is subnormal for Paluxy. Single well reserve of 240,000 to 300,000 bbls.

Young	Allar	**NORTH TEXAS—New Oil Pay** Panhandle Refg. Co.'s R. K. Mayes 1, 467' ewl & 958' nsl of S. Anderson sur A-3.	3-19-43	4-13-43	3573	3573	Bend lime, Penn.	F 524; 9/64"	40	Anticline	Geology	120,000 to 160,000 bbls.; this deeper zone due to cover more area than pool's six 2700-ft Strawn sand flowing wells.
Jones	S. Noodle	**WEST CENTRAL TEXAS—New Oil Pay** Cardinal Oil Co.-John W. Byram's Frank Carter 1, 467' out ne & 2½ T&P 33, Blk 18.	2-11-43	4-17-43	2448	2448	Noodle Creek lime, Penn.	P 276	38	Anticline	Previous drlg.	40,000 to 50,000 bbls.; thin pay; water with oil; 2 mi from prod. in same zone.
Montgomery	Pinehurst	**UPPER TEXAS GULF COAST—New Oil Fields** LaGloria Corp.'s Grogan-Cochran Lumber 1, 647' fr nw & sel of 157-ac. lse, A. Prather sur.	6-30-42	12-15-42	11921	8760-8766	Wilcox sand, Eoc.	F 243; 4/64"	38	Faulted	Geophysics	Thin sand; likely not over 2 to 5 mil. bbls field.
Waller	Katy	Stanolind's Pattison 1, 660' fr n & el of sec 96, J. M. Bennett sur, A-285.	1- 6-43	3-25-43	8000	6622-6625	Cockfield sand, Eoc.	F 153; 7/64"	44.3	Same as Katy fld.	Subsurf. & drlg.	One of most important discoveries of district this yr; is first oil well of Katy structure, 3 mi n of gas fld. Opens thousands acres to oil or dist. prod, making 30,000 ac. fld. with reserve of possibly 5 to 25 mil. bbls.
Fort Bend	Clodine	**UPPER TEXAS GULF COAST—Oil Field Extensions** Stanolind's Cinco Ranch 1, 467' fr s & wl o 1369-ac lse, J. Brock sur, A-110	2-28-43	3-24-43	7502	7479-7498	Yegua sand, Eoc.	F 86; 3/64"	42	Faulted	Subsurface	½ mi n extension; only few ft of pay; possibly 100,000 to 250,000 bbls.
Galveston	Hitchcock	Maco Stewart's Fee 1 (14), 660' nw at ra to Texas City terminal RR ROW & 600' n'ly at ra to highway No. 6.	12-20-42	4-15-43	7781	5132-5143	Sand, Miocene	F 486; 7/64"	29.2	Flank of known fld.	Surfurb. & drlg.	½ mi extension; possibly 2½ million bbls; opens prod. across major fault from field and beyond a dry hole.
Matagorda	Old Ocean	Tide Water's McDonald 1, 1038' fr sel & 1775' fr swl of 271-ac tr, Battle, Berry & Williams sur.	11-19-42	4-15-43	10904	10075-10089 10094-10099	Frio sand, Olig.	F 454; 7/64"	38.5	Part of Old Ocean fld.	Drlg. & subsurf.	¾ mi w extension; important; add several hundred acres and possibly 15 million bbls. reserves.
Calhoun	Jay Welder (Duck Bay)	**LOWER TEXAS COAST—Oil Field Extensions** Stanolind's Welder 7-B, 330' s of s shore Goose Bay (tract 153, state lands) in Eusebio Hidalgo grant on tract 10, block E.	3-10-43	4- 2-43	5651	5648-5649	Catahoula sand, Mio.	F 152; 7/64"		Anticline	Subsurface	½ mi sw extension to thin-sand field; may add 100,000 bbls. oil.
Nueces	Agua Dulce	Hiawatha O. & G. Co.'s Dryden 1, 467' fr n & el's w 240-ac of n½ sec 192, F. Z. Bishop Palo Alto subdvn.	2-17-43	4- 1-43	7165	7120-7124	Sand, Oligocene	F 140; 7/64"	42.5	Faulted	Subsurf. & drlg.	½ mi se extension of oil; may add much as 2 million bbls to large, multi-sand field.
Starr	Lockhart	**SOUTHWEST TEXAS—New Oil Field** Dee Davenport & Lockhart Oil Co.'s Caffarelli 1, 660' fr s & wl's share 19-C, J. A. de la Garza Falcon porcion 80, 4 mi ne Los Olmos fld.	2-19-43	3-29-43	3630	3620	Frio sand, Olig.	F 77; 7/64"	46.6	Faulted	Subsurf & Geophys.	Thin sand; may be ½ to 2 million bbl. field.
Starr	N. Sun	**SOUTHWEST TEXAS—Oil Field Extension** Sun Oil Co.'s Laurel 2, 500' fr el & 660' fr sl 2295-ac lse, La Sal Colorado gr.	3- 5-43	3-30-43	5108	4545-4551	Frio sand, Olig.	F 135; 4/64"	48.5	Anticline	Subsurf.&Geophys.	May add ½ to 3 million bbls oil to field of several pays that promises to grow large.
LaSalle	New Mexico	**SOUTHWEST TEXAS—New Gas Field** Quintana Pet.'s South Texas Syndicate 1-D, 6490' from sl & 2010' fr wl 7488-ac. tr, H.G.N. sur 8, A-1029, 14 mi s Fowlerton.	2- 2-43	4- 4-43	7115	6030-6035	Wilcox sand, Eoc.	F 4 & 4 mil. 1/4"	48	Stratigraphic trap agst fault.	Geophysics	No real oil prod. yet, but could develop into important oil reserve.
Fremont	Steamboat Butte	**WYOMING—New Oil Field** Briush American Oil Producing Co.'s Tribal 1-E, ne nw nw 32-3w.		4-10-43	5119	5091-5119	Sundance sand, Jur.	111	30			3 mi nw Brit.-Amer.-Superior's Tensleep discovery at Pilot.
Park	Frannie	**WYOMING—Oil Field Extension** Kirk Oil Co.'s 5-M Government, se sw sw 24-58n-98w.		4-26-43	3271		Madison lime, Miss.					First well on n side of 2 major faults that bisect fld; ½ mi nw and across faults from previous prod. If Madison lime runs under Elk Basin fld, 12 mi to w, huge black oil field may result.
Park	Oregon Basin	**WYOMING—New Oil Pay** Yale Pet Co.'s Hancock 4, nw ne ne 5-50n-100w, on s dome		4- 4-43	4652	4155-4300	Madison lime, Miss.	P 1440	18			Not far from several other oil wells.

* Barrels of oil per day (24-hr. rate), flowing, pumping, or swabbing; or millions of cubic feet of gas daily, open flow capacity; size of choke given in inches. † Ages of producing formations abbreviated as follows: Mio, Miocene; Olig, Oligocene; Plio, Pliocene; Eoc, Eocene; U. Cret, Upper Cretaceous; L. Cret, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn ,Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Miss, Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.

ing on the more pessimistic, might credit the April discoveries with less than 65 million barrels of reserves, or about one half of current withdrawals from established fields. These figures are at best rough estimates, based on consideration of types of fields involved, areas in which they are located, geophysical data, and any other pertinent information. Furthermore, they represent not definite additions to reserves but possible reserves yet to be developed.

Although PAW set up a goal of 4500 wildcats for 1943, or about 50 percent more than the record-setting totals of the past few years, in the hope of maintaining or increasing producing ability, actual results continued to fall far short of the goal. During April, wildcat completions were on the basis of only 2900 per year, only 241 tests having been finished, compared with 258 in March and 222 in February.

In the first four months of this year, there were 975 wildcat completions, this figure also being on the basis of about 2900 wildcats per year.

As the months elapse, and with one third of the year over, it becomes less and less likely that the goal of 4500 wildcats this year will be reached. For it to be attained now, after the poor start, there would have to be 3525 wildcat completions in the last 8 months of the year—an average of 440 per month, in contrast with the 241 actual of April, an increase of 80 percent over the April rate.

Figures given above, indicating so far this year a wildcatting rate of 2900 tests per year, include semi-wildcats or extension tests, productive and unproductive; whereas the only available figures on wildcatting in previous years, totaling around 3000 completions per year, did not generally include this class of exploration. Thus the 2900 wildcats per year for 1943 actually are under the 3000 average of earlier years not only by the several hundred tests difference but also by the number of semi-wildcats, which have been for 1943 on the basis of about 200 per year.

Exclusive of semi-wildcats or extensions, there were 903 wildcat completions in the first four months of 1943, against 958 in the corresponding months of 1942, a decrease of about 6 percent.

While the total completions were off only by the 6 percent for the first four months of this year, there was a larger decrease in productive tests, which totaled 128 for January-April, 1943, or 28 percent less than the 178 of the corresponding months of 1942. On the smaller total of completions, there were practically as many dry holes this year as there were last year.

Discoveries of oil and distillate fields totaled only 95 in the first four months

[*Continued on page 46*]

Minimizing Explosions in Compressed-Air Systems

By THOMAS D. BROWN
Acting Area Superintendent, Shell Pipe Line Corporation, Colorado City, Texas

THE purpose of this article, which was presented before the Texas Safety Association meeting in Houston on April 27, 1943, is to point out and discuss the hazards involved in the operation of compressed air systems, particularly as regards the accumulation and ignition of combustible mixtures. In it are recommended certain procedures which, if followed, will minimize the possibility of explosions in these systems.

Most of the reference and research work on this subject was done while the author was in the employ of the United States Bureau of Mines. However, many operators kindly allowed him access to their compressed-air plants and answered numerous questions. Valuable help and advice was given by G. M. Kintz of the Bureau of Mines, and articles in trade journals and publications of the Bureau of Mines and the National Safety Council have been drawn upon freely.

SINCE 1861 when the first compressed-air plant was used successfully by the French in the Mount Cenis tunnels, there have been many violent and destructive explosions involving compressed-air systems. These explosions are of two principal types: (1) pressure-vessel ruptures due either to weakening of the vessel itself or to an excessive pressure in the system usually resulting from failure of an automatic device; and (2) combustible explosions resulting from the ignition of a mixture in the system which builds up sudden or excessive pressures beyond the ability of the safety device to relieve.

The more destructive explosions have been publicized in the press, and discussions of some of them have appeared in trade and professional journals. Most of the less destructive ones, however, have received little attention, a condition which has resulted in a general lack of knowledge regarding the hazards involved as well as the lack of regulations requiring the proper operation maintenance and inspection of compressed-air plants. This lack of knowledge and regulation seems accountable for most of the explosions in compressed-air systems.

E. Monahan, engineer, Industrial Accident Commission of California, states:

"The lowly air tank is a pressure vessel which has caused more serious injuries and fatal accidents than the steam boiler. This is partially due to the fact that, while most operators realize the dangers involved in the operation of the steam boiler, very little thought is given to the possible dangers involved in the operation of the compressed air tank."

The March, 1938, issue of "Petroleum Safety" gives a report of a discussion on "What Causes Air-Receiver Explosions" from which the following is quoted:

"The theory was advanced that these explosions might not be due to the simultaneous failure of both the automatic pressure switch and the safety valve, but that an explosive vapor-air mixture was formed and ignited . . . Evidence that the nature of the contents of a tank and its temperature may be just as important as its pressure . . ."

Failures of air-pressure vessels have been greatly reduced, but not eliminated, in recent years as a result of improvement in the design, materials, and construction of pressure vessels. Such failures still occur as the result of faulty safety valves and automatic switches or due to the weakening of pressure vessels from corrosion, vibration, etc.

Discussion of air-pressure vessels and their failure from mechanical causes is a subject beyond the scope of this paper. Suffice it to say that observation of a number of compressed-air plants disclosed many unsafe conditions, any one of which might directly or indirectly result in a pressure-vessel failure. For example, in one plant a large air receiver was located near a truck driveway and had been backed into and damaged on several occasions. A receiver at another plant was not drained until the condensed vapors had so reduced its capacity that investigation was necessary to disclose the trouble. Some receivers had no drains and others had the drain located so that all of the liquid could not be removed.

At some installations the pop safety valves were corroded or obviously had not been blown or tested for some time. Such accessory conditions are conducive to the eventual failure of pressure vessels even though they are manufactured by reliable concerns in accordance with the best design and shop practices.

Like all other plant equipment, air-pressure vessels are subject to progressive deterioration from various causes. External corrosion may never be noted and is, therefore, more dangerous when they are buried or located in inaccessible places. Internal corrosion may be caused by water and sulphur vapors in the air stream. Crystallization or fatigue of the metal may be caused by vibration from the compressor or other adjacent machinery, or by excessive heat.

In addition to the weakening effects of deterioration, there are the many conditions which may allow the building up of excessive internal pressures sufficient to cause failure. These include principally the failure or improper adjustment of automatic cut-off fixtures, safety valves, unloaders or other devices. Another prolific cause of excessive internal pressures is the leakage of high-pressure air through gaskets, etc., into equipment designed only for low pressures, such as the inter-cooler and compressor water jackets. Occasionally failures also occur in compressed-air systems serving to start internal-combustion engines due to engine backfires through defective injection valves.

These various unsafe conditions, and a full discussion of ways and means for their mitigation, are proper subjects for a paper much more comprehensive than this one.

Explosions Resulting from Ignition of Combustible Mixtures

In order to have an explosion in a compressed-air system as a result of the ignition of a combustible mixture—either of a slow-burning type which usually does little or no damage or one of a violent and destructive nature—two conditions must be present: (1) a combustible mixture in the system and (2) a temperature high enough to ignite that mixture.

To have a combustible mixture, the

ratio of the combustible to the air must be within certain definite proportions which are called the "inflammable limits." Near the lower and upper limits the flame speeds of most combustibles are slow and cause only slow burning fires, while near the middle of the explosive range the flame speeds are fastest and may be violent and highly destructive. Any fire observed in the air lines or receiver is a warning that dangerous conditions exist which should be remedied before operation of the system is continued.

It is not always possible to find all the factors entering into an explosion due to ignition of combustible mixtures in a compressed-air system. However, when such explosions are recognized as resulting from that cause, elimination of conditions that may lead to such an explosion is simplified.

No conclusive explanation has been found for the origin of ignition temperatures in these systems, and thus their prevention is correspondingly difficult to control. However, since combustible mixtures are also a prerequisite, and since the factors leading to their accumulation are explainable and more directly under the control of the operator, the prevention of such accumulations is the first line of defense against the occurrence of explosions.

Accumulation of Explosive Mixtures

Combustibles may enter compressed-air systems through the air intake, from the lubricating oil, or by leakage into the system in several ways. The compressor cylinder lubricating oil is usually the chief source.

When oil is fed into the cylinder, some mechanical atomization always takes place. Minute droplets are deposited on the discharge valves and soon are carried into the air line and receiver. Most of these droplets precipitate and adhere to the air lines near the compressor to form a film that entraps carbon particles and grit. The air lines here are the sources of many fires, and deposits of carbonaceous material in the lines not only are direct supplies of fuel, but also they usually are porous and capable of storing other inflammable vapors absorbed from the air stream.

Unatomized oil remains on the piston and cylinder walls where it may be vaporized to an extent depending on the temperature of the cylinder, the flash-point of the oil and the amount present. The "flash-point" is the temperature at which enough vapors are given off to cause a flash when an ignition temperature is present. Vaporization usually commences at temperatures well below the flash-point; and increases as the temperature increases.

Vapors are generated also by chemical breakdown and oxidation of the lubricating oil. Carbon monoxide, which is both inflammable and poisonous, has been found in considerable quantities in many compressed-air systems. Small amounts of sulphur, often present in the best of lubricating oils, may create sulphur gases or compounds that are inflammable, corrosive and dangerous from other points of view.

Some of the oil breaks down into gummy carbonaceous deposits on the piston, in the cylinder-head clearance spaces and on the discharge valves. Parts of these deposits eventually break into combustible and highly abrasive particles. Coke often is formed from the lubricating oil and is deposited in the air lines and receiver.

It is obvious that the oil used for lubrication should be of the highest quality. It should have a high flash-point, a low carbon content, and be as free as possible of sulphur. It must do a good job of lubrication while being fed in small amounts. Only high-grade mineral oils meet these requirements.

Contamination of lubricating oil in the compressor cylinder by low-flash-point naphthas or combustible vapors acts to lower the flash-point of the oil. The practice of cleaning compressor parts with kerosine or gasoline may substantially reduce its flash-point as well as add combustible materials to those already in the system. Squirting kerosine into the intake to cut gumming is indeed dangerous for this reason. I observed one case where natural gas was used to force oil from storage to the oil pump. Some of the gas dissolved in the oil and set up a condition that resulted in several explosions before it was remedied.

Combustible vapors are given off and carbon deposits formed to some extent even under the most favorable conditions and when the best of lubricating oils are used. An excess of oil may create hazardous conditions. Usually the amount that will be both safe and give efficient lubrication must be found by trial. If an excess of oil is needed to maintain the efficiency of a worn or defective compressor, the equipment should be overhauled.

The means of feeding the oil to the compressor is important. Force-feed lubricators are recommended by some engineers, although these are hard to regulate and keep adjusted, and they use larger amounts of oil than other feeds. Drip-cut lubricators with visible feed probably give the operator greater control of the amount of oil fed to the cylinder. Crankcase-lubricated compressors in good repair provide proper lubrication without admitting excess vapors to the system; however, the rings need leak only a little to cause a hazardous condition. Many explosions have occurred where such compressors were used and, in many cases, they have been replaced by other types. With this type of compressor, care should be taken to see that the oil does not become contaminated by low-flash-point liquids. The crankcase never should be cleaned with gasoline or kerosine.

Probably the safest air compressors are those that do not require oil for lubrication. Graphite piston-rings have been developed that require no further lubrication. Soap-and-water solutions replace oil as the lubricant in some air compressors. However, oil must still be used for a few minutes after the compressor is started and for a few minutes before it is shut down. Some engineers claim that soap-and-water as a lubricant has more disadvantages than advantages; however, its use removes much of the foreign deposits from compressor parts.

Combustible Through the Intake

Location of the air intake has an important bearing on the safe and efficient operation of a compressed-air plant. When the intake is located in the compressor building, not only are combustible vapors likely to be picked up and carried into the system but also the temperature of the intake air is usually several degrees higher than when the intake is located out of doors. Usually the building contains combustible vapors, such as exhaust gases, crankcase mists and vapors from volatile inflammable liquids. Machinery or floors in a building that contains an air compressor intake should never be cleaned with low-flash-point liquids—the vapors from which will be picked up and carried into the system.

Air intakes should be located out of doors where a supply of clean, cool air is readily available, and they also should be equipped with efficient filters to prevent explosive or corrosive dusts from being carried into the system.

Ignition Temperatures in Compressed-Air Systems

Except for spontaneous combustion and external sources of heat, high temperatures in compressed-air systems must originate in the compressor itself. In many cases these can be traced to faulty operating conditions; in others they appear without warning and seem to be caused by an elusive combination of causes. Until research is undertaken, only speculation can be made as to some of these causes. However, a discussion of the known and of the possible causes may aid to prevent them.

Heat of Compression

When air is compressed, heat is generated. If the heat of compression is removed during compression, the air is compressed *isothermally*. When none of

the heat is removed during compression, the air is compressed *adiabatically*. In pratically all of the air compressors in use in the United States, the discharge temperature of the air is very nearly that of the theoretical adiabatic temperature.

The theoretical adiabatic discharge temperature for air at 14.7 pounds per square inch, absolute, pressure and 60° F. when compressed single stage to 100 pounds, gauge, pressure is 485° F.; if compressed to 150 pounds, gauge, the discharge temperature is 589° F.; and if compressed to 250 pounds, gauge, the discharge temperature is 749° F. The corresponding discharge temperatures for two-stage compression are 243°, 279° and 331° F.

Factors other than discharge pressure also affect the discharge temperatures of compressors, such as the compression ratio, the temperature of the air at intake, the intake pressure. An increase of a few degrees in the temperature of the intake air usually results in an increase of several degrees in the discharge temperature. Likewise, with a fixed discharge pressure, a decrease in the intake pressure which increases the compression ratio, will cause a higher discharge temperature. Although many factors affect discharge temperatures, they can be controlled within limits by compression in stages, by cooling the air between stages, and by effective cooling of the compressor.

The operating temperature of a compressor may fluctuate widely throughout the day due to changes in atmospheric temperature which affects the intake temperature and the efficiency of the cooling system. This must be considered as a normal occurrence and the system must be so designed that these daily changes will not be excessive when the atmospheric temperature varies from one extreme to the other. In air-cooled compressors the operating temperature usually is higher and varies over a wider range than that of liquid-cooled compressors.

The average normal operating temperature may be expected to rise progressively over a period of time due to wear of compressor parts and a resulting loss of compressor efficiency. This rise is gradual and predictable. While such daily and progressive changes in operating temperature may be a contributing factor, they do not account for the sudden extreme temperatures that have been known to ignite combustible mixtures in compressed-air systems.

High Temperatures Due to Faulty Operating Conditions

Most high temperatures in compressed-air systems are due to faulty compressor operation or to the improper functioning of compressor parts or accessories. When any sudden increase in the discharge temperature occurs, the compressor cooling and lubrication systems should be checked immediately. When the amount of oil is insufficient or when an inferior or improper grade of oil is used, a dangerous discharge temperature may rapidly result.

In liquid-cooled compressors, the cooling system is just as important as the lubricating system. An inadequate supply of cooling water, or use of cooling water that is too hot, may cause discharge temperatures to increase to a dangerous degree. In water-jackets, scale or short-circuiting of cooling water due to broken baffles may result in an inefficient transfer of heat from the compressor to the cooling system.

Increasing the discharge pressure, throttling of the suction, improper use of inter-stage valves and drains, presence of defective or improperly used unloaders, and stuck or leaky valves may increase the compression ratio in one or more stages of a compressor and result in rapid rise in discharge temperature.

Leaky Discharge Valves

Any discussion of high temperatures in air compressors requires mention of leaky discharge valves as a possible cause. Some engineers hold that leaky discharge valves do not cause a higher discharge temperature, it being argued that air leaking through the valve expands against the compressor piston, thereby doing work and losing its heat of compression. Other engineers maintain that air leaking through the valves does no work on the compressor piston because it is "throttled" or "wire-drawn" through the valve, thereby retaining its heat of compression and further increasing the temperature of the compressor cylinder, piston and valve and resulting in a higher discharge temperature.

Years ago experiments were conducted at the University of California to determine the effect of leaky discharge valves. It was found that dangerously high discharge temperatures occurred only when a leak was present in the high-pressure-discharge valves and then only when the intake was closed. It is believed that, with the intake open, a portion of the heat generated was carried away by the flow of air through the compressor. With the intake closed, no air flowed through the compressor to carry away the heat, thereby causing an excessive temperature to accumulate. This condition can exist in any compressor that is running unloaded unless the compression cylinders are open to the atmosphere.

Spontaneous combustion frequently has been advanced to explain ignition in compressed-air systems. Oxidation of lubricating oil, spontaneous ignition of carbon and hydrogen sulphide, and the burning of iron sulphide are some of the forms of spontaneous combustion mentioned. It is well known that carbon—such as charcoal or coke—impregnated with hydrogen sulphide will fire immediately when exposed to air.

As previously mentioned, carbon deposits, sometimes in the form of coke, are present in most compressed-air systems. Since sulphur also is present in some systems, the formation of hydrogen sulphide and iron sulphide is possible. The density of oxygen coupled with the usual high temperatures in compressed-air systems make ideal conditions for spontaneous combustion. Although spontaneous ignitions of combustible mixtures are probably in the minority, they should be considered when investigating such ignitions.

Particles of carbon or lint may become ignited in the compressor and may be carried into the air lines or receiver where they are capable of igniting combustible vapors. Care should be taken to see that exhaust pipes, steam lines, fires and other external sources of heat do not come in contact with air lines or receiver.

We cannot lay down hard and fast rules for the prevention of high temperatures in compressed-air systems. However, if operating conditions are currently known, the plant can be shut down before a dangerously high temperature is reached. Therefore, it is highly advisable that thermometers and pressure gauges be installed on the air intake, and on the discharge of each compression stage. Final discharge temperatures and pressures should be recorded. Thermometers should be installed on inter-coolers and after-coolers, and the receiver should be equipped with a pressure gauge and thermometer. The temperature of the cooling water should be checked at frequent intervals both before and after it goes through the water-jackets. Visible means of checking the amount of oil to the compressor cylinders and the circulation of the cooling water should be provided. An after-cooler located as near the compressor as possible reduces the possibility of explosions originating in the air lines or receiver.

Some operators and engineers recommend the installation of fusible plugs, which melt before an ignition temperature is reached in the discharge lines or air compressors. Such plugs afford some protection by releasing the pressure on the discharge lines and receiver and by warning the operator that an excessive temperature has existed; however, fusible plugs do not protect against instant or localized ignition temperatures which may result from spontaneous combustion, external sources of heat or burning particles of carbon.

Capacity Well Production Requires Clean Screens

Development of numerous efficient screen or perforation cleaners to prove of special value now that wells must be maintained at full producing capacity if industry is to meet its growing consumption requirements

By FRANK BRIGGS, Staff Writer

ONE important detriment to maximum oil output of many wells is the "strangulation" of the oil entrance by clogging or "sheathing" of the screens or perforations. Mud, sand or other fluid-carried substances form accumulations or clinging depositions that render full fluid entrance into the producing pipe impossible, thus restricting production. The problem of screens has been subjected to many tests and experiments and improvements are constantly found for overcoming bottom-hole conditions of operation; however, many wells will continue to develop clogging despite design, and the need for screen or perforation cleaning to increase production is prevalent.

The cement-like sheath formed around the screen by the deposition of matter from the fluid has always been a source of concern for the producer; before development of modern screen-cleaning methods it was necessary to perforate the clogged screen and set new screen of a smaller diameter within the old pipe. This process was repeated every time the clogging occurred until finally no smaller screen could be inserted. In many cases this required years, but many wells have served long enough to require pulling of the concentric plugged screens and have new settings installed.

The methods of cleaning perforated, slotted or screen pipe are most commonly based on hydraulics plus mechanics, chemical methods, a combination of hydraulics and chemicals, and a recent development that involves the use of explosives.

Hydraulic Type Cleaners

There are cleaners of this type that are lowered into operation in the well by means of sand lines. Each has a distinct arrangement for anchoring and releasing, for applying pressure to the washing fluid—but all involve the use of trapped fluid between two sealed-off sections of the pipe perforation or screen to be washed.

One such cleaner has a trigger and latch arrangement that, upon reaching the bottom of the well, forces the trigger up thus releasing slips that engage the pipe walls. A traveling barrel and swab cup attachment, with a stroke of about 14 feet, discharges fluid (trapped between an upper ball-and-seat valve and the lower swab cup) on the down-stroke through a polished tube and out by-pass ports. Thus the fluid is forced out through the perforations or screen; it is drawn back into the cleaner through the perforations by means of the suction created below the swab cup on the upstroke of the barrel. This upward stroke also causes an outward flow of the fluid above the cup through the perforations; thus fluid under pressure is kept circulating in and out of the perforations on both strokes of the barrel.

The service company using the above described cleaner begins the operation by bailing out sand and mud with a suction bailer. Chemicals, to loosen or partially dissolve the scale or mud pack around the entrance, are placed in the well by means of a dump bailer and allowed to stand from 24 to 36 hours. The initial chemical treatment is an important part of the procedure and much experiment has been done to determine satisfactory solvents. One used a great deal is a commercially manufactured 20 percent solution of hydrochloric acid; 50 gallons is an average figure for the quantity employed. Another solvent found successful is that composed of a mixture of quebracho and pyro-sulphate dissolved in water; this mixture usually is made in the proportion of 10 pounds of each chemical to 1 barrel of clear water.

After the chemical treatment, the cleaner is run into the well and the washing process is instituted. The pumping action of the cleaner causes removed particles to be washed into the well, from which they are removed by repeating the bailing process. These alternate cleaning and bailing operations are repeated until all deposits have been removed from the fluid entrance, whether it be screen or perforations.

Another of the hydraulic-type cleaners, called perforation swab, has an enlarged bowl below the swab-rubber cup so as to bring the face of the swab within ¼-inch of the inside casing surface. As the tool is lowered on the sand line through the fluid, a flapper valve allows the fluid to by-pass up through

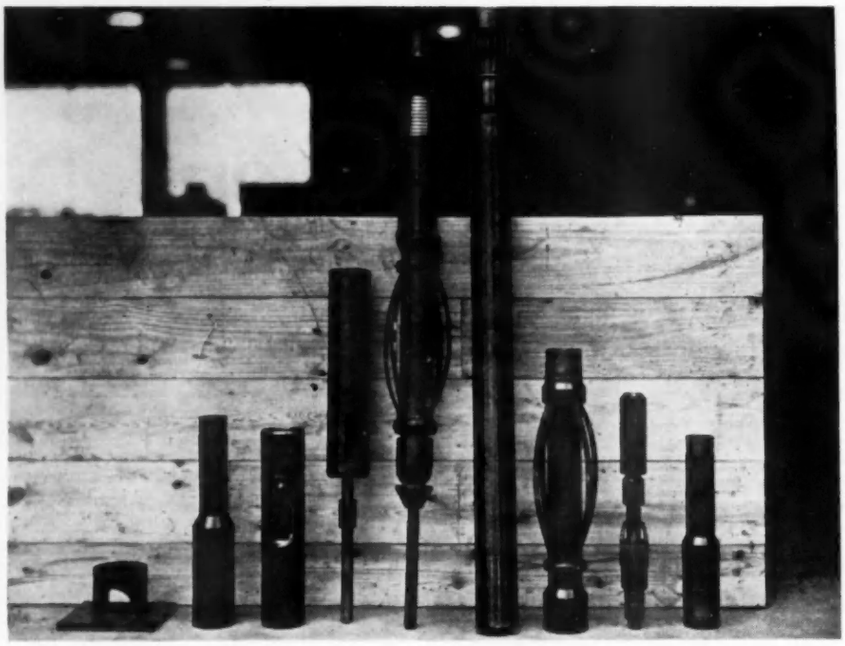
Tests Show Increase in Permeability By Acid Treatment

Tests were run on 11 cores having an average solubility of 2.6 percent in hydrochloric acid and 12.4 percent in mud acid. (The hydrochloric acid soluble material is principally calcium carbonate, while the mud acid soluble material is clay plus the calcium carbonate), with the following results:

Acid Used in Treating	Increase in Permeability Percent
Hydrochloric acid	3.8
Mud acid	110
Hydrochloric acid followed by mud acid	101
Mud acid followed by hydrochloric acid	280

Tests also were run on 23 cores having an average solubility of 12.4 percent in hydrochloric acid and 22.2 percent in mud acid, with the following results:

Acid Used in Treating	Increase in Permeability Percent
Hydrochloric acid	145
Mud acid	15 decrease
Hydrochloric acid followed by mud acid	195
Mud acid followed by hydrochloric acid	346



Parts of one of the hydraulic types of screen cleaner and items used in connection with it. Left to right: stand for suction bailer when not in use; rope socket for running all tools; suction bailer; dump bailer; suction or traveling-barrel anchor assembly; swab assembly for traveling barrel; guide for suction and dump bailers; swab run in connection with suction bailer; bleeder valve for suction bailer. Traveling barrel and polished tube are not shown.

the mandrel and out through ports above the swab rubber. The flapper valve closes on the upstroke and the fluid, passing through the assembly, is jetted out through perforations in the bowl directly against the pipe perforations. Removable plugs can be screwed into the bowl ports so that the jetting action can be regulated to meet the requirements of the job.

Utilizing the energy of the fluid column, another type of cleaner is a development of a differential-pressure bailer; a differential pressure accompanied by a fluid movement to equalize this differential is the principle upon which it is based. In general this tool consists of an air chamber (containing air at atmospheric pressure) means for suddenly opening this chamber, a receiving chamber and a bottom with a flapper valve to retain the load. The bailer can be converted into a washer by means of two attachments; one utilizes a well-drag element of some sort so that the air chamber may be open on the upward movement of the tool, thus permitting opening at any desired depth of the well. The other attachment is a pack-off arrangement usually consisting of two packers mounted on a hollow mandrel. The fluid entering the air chamber must come from the confined space between these two packers. With this attachment, the fluid entering the bailer must first pass out through the perforations above the upper packer, thence down the outside of the casing and through the perforations into the space between the packers. This is accomplished by opening the air chamber valve; the well fluid under the bottom-hole pressure, rushes through the bottom and load chambers into the air chamber, carrying with it the material to be bailed. The washing effect of the fluid passage cleans the perforations. A later development of this tool involves the filling of the air chamber from a point above a rubber packer which is supported by slips. The fluid column is given a downward velocity, which is checked very suddenly as the air chamber becomes full. This gives the effect of a "fluid hammer blow" against fluid, which sets up stress waves that drive the sand particles away from the screen openings.

The essential difference between the various types of hydrostatic washers and bailers seems to be in the method of sealing off and opening the air chamber. These may be grouped as follows:

1. The disc type, wherein a breakable disc is used to seal the air chamber, this disc being shattered by mechanical means when the bailer is set on bottom.

2. The valve-section type, wherein a short sleeve valve section comprising two members telescopically mounted is used to seal the air chamber, the sections being telescoped by weight of the air chamber when the bailer is set on bottom.

3. The rod type, wherein a rod carrying a ball valve on the lower end is run through the air chamber and allowed to extend through a packing gland at the upper end of the chamaber. The valve is forced from its seat by the impact of the lower end of a set of tubular jars run above the air chamber.

Aside from those washers run in on wire lines, there are types run in on the drill pipe or tubing, and utilizing fluid pressure pumped from the surface, spray the liner or perforation by patented arrangements of nozzles and packers. These have the advantage of pressure control on the surface and whatever pressure may be required to clean the screen or perforations can be attained by adequate pumps. After lowering into the hole, the washer is locked in place by arrangements controlled by turning the run-in string. Lowering the pipe slightly after locking the washer in place, closes off the bottom end and forces the fluid injected down the pipe out through nozzles against the liner or walls to the washed. Washing usually is done from the bottom up as this procedure merely requires lifting, turning and then lowering of the pipe to change and reset the washer from one location to the next.

Explosive Cord

The use of explosives in cleaning perforations in the well is a recent development. The explosive is in the shape of a cord, having the appearance of an ordinary powder fuse, and is lowered into the well and detonated by special equipment. The explosive cord is not affected by water, as long as one end of it is dry for detonation; hydrostatic pressure and temperature likewise have no affect. After setting a length of the cord in the well opposite the perforations to be cleaned, it is exploded electrically by means of the usual dynamite cap. The clots of mud, sand, paraffin plugging the perforations are disintegrated.

Analogous to the energy and work of an electric circuit with high voltage but slight current, the explosive cord has been designed to propel stress waves with high velocity but small volume; this provides sufficient energy for "punching" out the plugs in the perforations but not enough to damage the pipe or the well formation. This effect is attained by the fact that the cord explodes at a very fast rate, 4 miles per second, but the amount of explosive per foot is very small.

The success of this method of cleaning perforations depends upon the transmittal of the explosive impulses through the medium of the fluid surrounding the cord to the zone to be cleaned. Due to the great speed of detonation, these impulses are not dissipated soon enough to relieve pressure through openings thus permitting instantaneous pressure to all perforations whether they be plugged or not. Should greater power be required to open stubbornly clogged

ports or slots, two or more of these cords can be run parallel to position opposite the perforations. The cord is run into the well on rubber-covered steel cable, weighted by either iron or concrete molds, depending upon whether or not this can be recovered or must be drilled through, and raised or lowered by means of a powered wire-line drum.

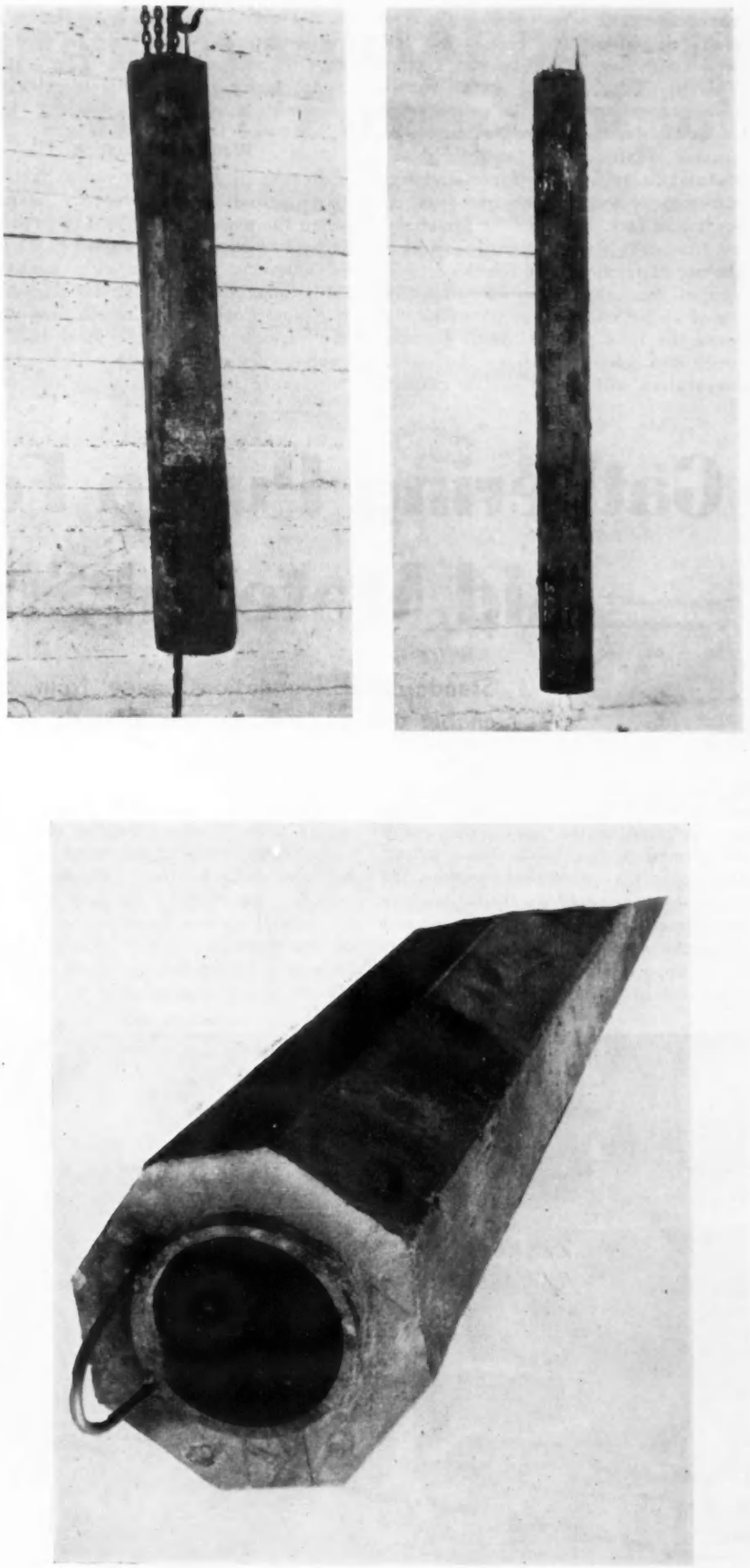
Chemical Treatment

Chemicals alone and in conjunction with other methods, have been used to dissolve and clean well matter from the fluid entrances, and also for formation cleaning. The result of chemical use has been to improve productivity through the reduction of high-pressure drops near the bore hole. This, in turn, is the result of increased permeability. In well rehabilitation, it is important to provide good movement of the fluid through the formation as well as through the entrance to the producing pipe.

The methods and means of increasing well productivity through chemistry may be different for limestone and sand zones. In limestone formations a very irregular pattern of permeability, varying from very dense sections to cracks and crevices in the zone, exists. Removal of the restrictions to flow through acidization (enlarging the channels of flow) are the results of chemical treatment of this type of formation. On the other hand, oil and gas reservoirs composed of sandstone generally have a uniform permeability pattern with continuous porosity that results in a "radial" flow of the fluid from the reservoir into the producing pipe. Except in cases where fractures occur, the acid does not penetrate vary far into the formation and other chemical means that extend their influence further into the sand formation are more desirable.

Particularly in the treatment of sand wells, most commercially prepared chemicals contain a mixture of hydrochloric acid and other chemicals, together with chemical agents that provide the solution with the necessary demulsifying and surface tension characteristics. These preparations will dissolve any of the materials that are soluble in hydrochloric acid, such as limestone, calcium, carbonate scale and cement. Also one of these commercial mixtures has the added ability to dissolve clay materials found in sand formations and drilling muds. Another important property of this particular mixture is that of destroying the colloidal or swelling properties of such substances as bentonite; for example, bentonite treated with this mixture will filter water (even though only a small portion of the entire mass has been dissolved) while untreated bentonite will not filter water.

Use of a mud-dissolving chemical in



Three photographs illustrating ability of explosive cord to clean perforations. The enlarged photograph and the one at the top left show a liner encased in cement. After detonation of the cord, the slotted perforations became clearly visible as shown in the other picture.

connection with screen cleaning is especially desirable upon completion of a well employing gravel-packed screens. This particular type of screen usually collects mud between the gravel interstices and restriction to maximum production results. A mud-dissolving acid cleans this type of entrance and may also remove some of the mud from the formation face. Best results for chemical treatment of formations require first the use of regular acids for the dissolution of the calcium or limestone, followed by the chemical preparations that cause the mud and bentonitic material to go into solution. Because the special preparation will also dissolve calcium, it will spend its effectiveness in this direction unless this material is removed first by the regular acid. The regular hydrochloric acid will not dissolve the bentonitic mass.

Well Rehabilitation

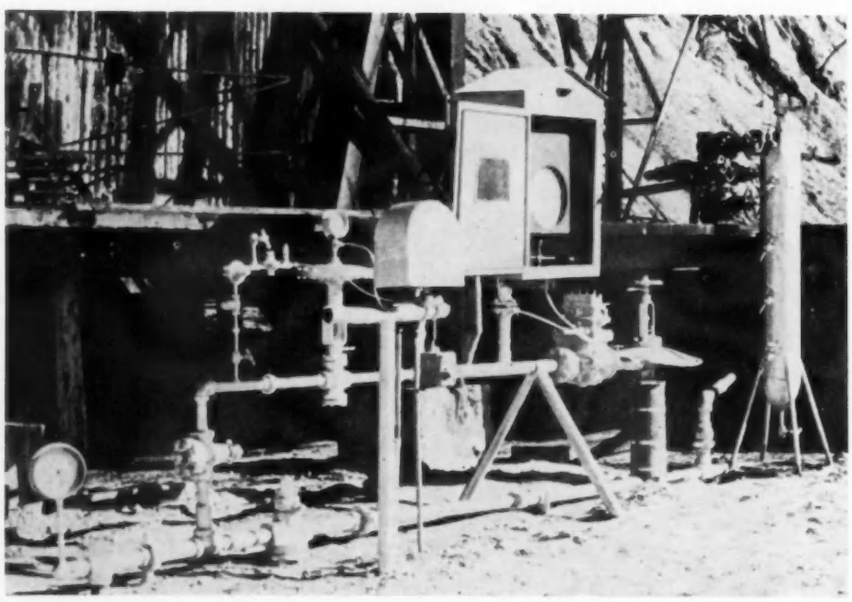
Results of any of the well-rehabilitation methods in use are only positive when the ability of the well to produce is held in check by obstructions to the oil entrance; when the oil is available but cannot flow freely into the producing pipe. Positive results obtained with the various cleaners are good and, of course, vary not so much with the type of cleaner but according to the well characteristics. Using the first described hydraulic cleaner and method, two example wells in the Louisiana Gulf Coast region increased production from 21 and 14 barrels per day to 45 and 32 barrels per day, respectively. These were pumping wells. The explosive cord method showed very good results in a California well by increasing its daily production from 6 or 8 barrels to 80 or 90 barrels. This was accomplished with one shot. In the Gulf Coast region, another well was increased from 12 to 37 barrels per day, another from 4 to 9. There are many, many case histories of very good production increases; these are only typical examples.

Gathering Pump Foundations Aid Material Shortage

Standardized foundations made from discarded pipe enable one pump to do job formerly requiring several

STANDARDIZED pump foundations making possible the use of one pump for numerous operations have helped one California operator overcome the pump shortage problem. By hauling the pump from one location to another and using the standard foundation for setting it up, a minimum amount of time is consumed in breaking out and making connections, and one pump does the job where several were formerly required.

The foundations are identical and are built of discarded pipe. Risers set in concrete are used at the four corners. Horizontal members connect each pair of end risers. Each pair of side risers have diagonal bracing to insure rigidity. Height of the foundation is the same as that of the truck used to move the pump, making it possible to skid the pump on or off the foundation with minimum effort. A skid-way guide is welded to the top cross members of the foundation to insure the pump moving into the proper position, and bumper posts welded to the back cross member keep the pump from moving too far back.



Pump mounted on pipe foundation, and connected to storage tanks and pipe line. Standardization of connections and heights make possible quick changes from one location to another. Pump is readily moved by truck and fits on all foundations.

Bolted flanges are used for the suction piping, and ground-joint unions that can be opened or closed with a hammer are placed on the by-pass and discharge lines. Gates and stops are similar, but if different type valves are installed, dimensions of the foundation can be adjusted by various length nipples when building, since flanges and unions are placed as close to the pump as possible.

The pump used is a conventional reciprocating unit, powered by a multi-cylinder gas engine driving through a flexible V-belt transmission. Pump, drive and power unit are set on a standard sub-base made by welding two lengths of angle iron to form a box-type skid with protected ends. The base is equipped with eye-bolts at each end for connecting the drum line when handling with the truck winch.

These standardized foundations have been found particularly helpful in using pumps for moving oil from tank batteries to pipe lines.

Extending Camshaft Operating Life For Increased Engine Power Output

Presented before the California Natural Gasoline Association

Full and even overload demands on power equipment in pump and compressor stations call attention to bettering cam performance as means for increasing horsepower of existing units and thus meeting requirements with prime movers now in operation

By FRED NOLTIMIER, General Petroleum Corporation

MANY of the compressor and pumping stations now in operation have been on the line for as much as a score of years. It is the intention of this paper to point out and illustrate methods of checking the performance of some types of cams which, in the natural gasoline industry, have actually required little or no attention, and therefore have received none over such extended periods of operation. Now, however, natural wear plus the demand for every available horsepower of compressor capacity forces us to search more intently.

Normally there are but two reasons for investigating the condition of a cam. If, when new, an engine does not deliver its rated power output or valve troubles are encountered, the cam design or timing might be questionable; but this rarely happens. The other most plausible reason may occur some years later when visual wear of the cam itself, or of its follower, becomes noticeable and causes the mechanic to become suddenly cam-conscious. The more common forms of cam wear can be divided as follows:

1. Pock marks of corrosion are usually most prevalent on the front or lifting faces having high unit pressures at point of contact with roller followers. As the percentage of total surface area destroyed is usually small, this condition does not necessarily mean that the cams are no longer functioning with a fair degree of efficiency, but, from this point on an accelerated rate of wear on both cams and rollers may be expected.

2. A more or less smooth and even wear upon both sides and top of the cam lobe may occur. This type of wear will cause an appreciable faling off in power with no ready means of ascertaining its cause or even its presence.

3. Wavy, irregularly worn places on cam faces can be easily detected. The common causes are continuous operation with excessive push rod clearance, sticky valves with a tendency to "hang up" at certain points, or improper valve spring tension.

There are three principal methods of checking cam performance. The first two described have the advantage of making camshaft removal from the engine unnecessary but do not permit such complete examination as does the third.

1. With the engine cold so that there are no rapidly changing temperatures of parts affecting push-rod clearances, carefully set same to normal operating clearance. Arrange devices on both inlet and exhaust valves which will indicate when they start to open or become completely closed. Then slowly bar over the engine noting at which points, in terms of degrees of flywheel rotation, the valve events take place. Should the flywheel be unmarked for valve timing, a steel tape laid around the wheel from the stationary index to H.D.C. or C.D.C. can be used to measure the intervening distance and from this can be calculated the respective valve timing.

2. While maintaining the engine "on the line" and under full load, indicator stop cards or valve cards may be taken. By using a very light indicator spring to magnify the bottom of the conventional power card, an analysis may be made of the scavenging or exhaust valve action, the inlet or filling strokes, and the beginning of the compression strokes. From these diagrams a diagnosis of valve, air-intake, or exhaust troubles may be made.

3. A third and quite accurate method of cam checking involves the removal of camshaft from engine and placing of same in a testing jig. A special dial comprising 720° of flywheel rotation for one complete camshaft rotation with an accompanying adjustable index permits direct reading of valve events as produced by the respective cam.

Cam-Testing Jig

Figure 1 is a simple schematic diagram of such a cam-testing jig. This shaft and both cams are forged integrally so that the setting to one refer-

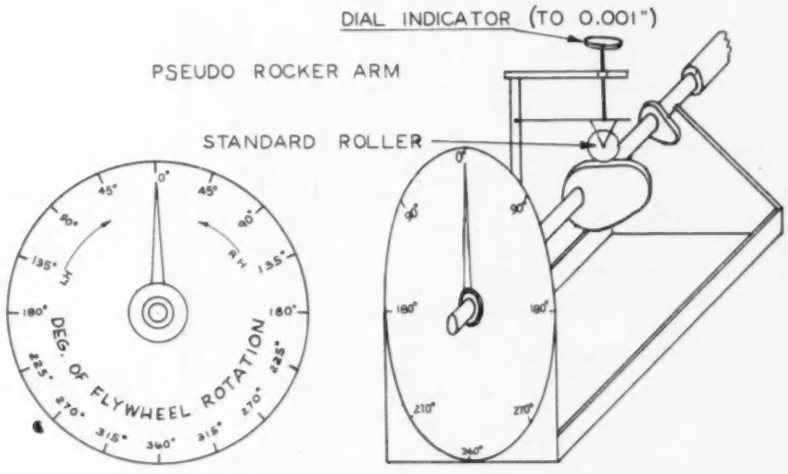


FIGURE 1

Schematic views of camshaft testing jig.

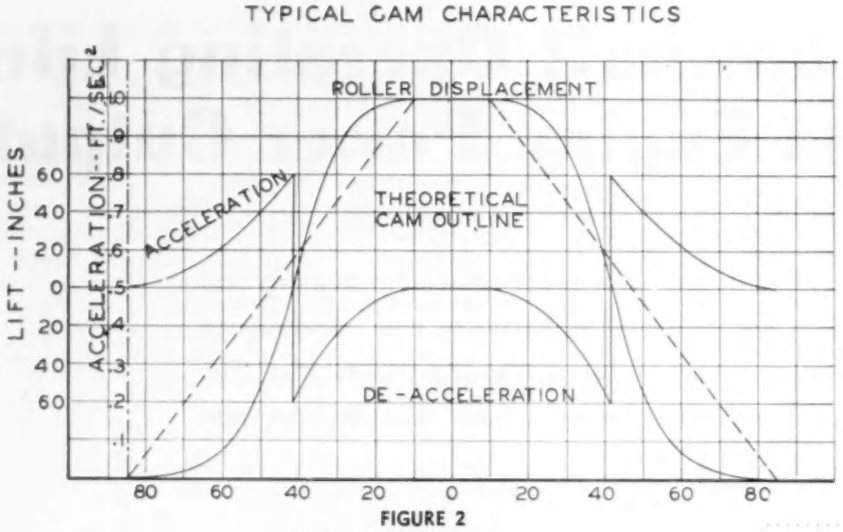


FIGURE 2
Camshaft rotation—degrees.

ence point in reality controls all four events; namely, the opening and closing of both the intake and exhaust valves. Operation consists of turning the camshaft so that the roller-follower rests upon the intake cam base circle with the attendent dial indicator set to read 0.000 inch. Rotate camshaft in the proper direction until the roller is starting to be lifted by the gradual incline of the cam ramp and the dial indicator reads +0.020 inch which corresponds to the 0.020-inch engine valve push rod clearance. Now set the pointer index at 10° ahead H.D.C. and tighten to shaft as this is the point of intake valve opening and all other valve events are read from the position of the index when the dial indicator reads +0.020 inch above the base circle on the respective cam ramps.

This figure may be made very elaborate, if deemed justifiable, by mounting a roller and a 1.000-inch range dial indicator above each cam in the same relative positions as in the actual engine. On the other hand, once a satisfactory cam of known characteristics has been secured, a single dial indicator with the pressure point bearing directly upon the cam can be used for checking questionable cams. However, the correlation between such a jig and actual engine performance must be worked out to insure proper interpretation.

Figure 2 is an illustration of typical cam characteristics. Displacement or cam roller lift in inches is plotted against degrees of camshaft rotation. The dotted line represents the theoretical movement desired but which must be changed until it is represented by the heavy line of gradually increasing and decreasing slope. Of course, fast valve action is desirable but it is governed by the mass and inertia of the moving parts, or, in reality, by the mass and acceleration. The acceleration curves must therefore be given consideration or a rapid and uneven wear of cams will result. Of more immediate consequence will be the pounding of valves and seats unless valve closure has been carefully decelerated at point of contact.

A cam-testing jig is of considerable assistance in determining the amount of "ramp" or very slow lift required in absorbing the push-rod clearance without excessive shock as well as the reverse action or depositing of valves upon their seats without a deleterious pound. Most cams of late design, particularly those using a roller follower, do not depend upon a straight tangential radius or the straight part of the cam face forming a perfect tangent with

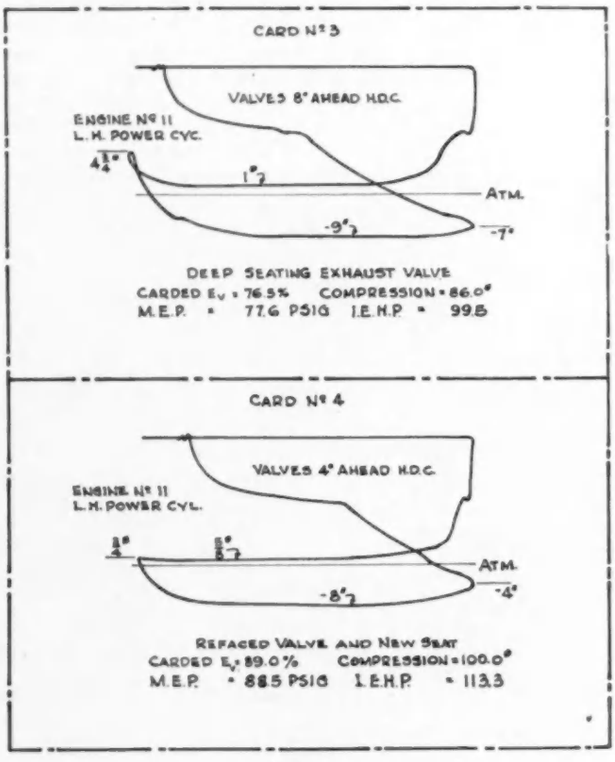

CARD Nº 3
VALVES 8° AHEAD H.D.C.
ENGINE Nº 11
L. H. POWER CYC.
ATM.
DEEP SEATING EXHAUST VALVE
CARDED Ev = 76.5% COMPRESSION = 86.0°
M.E.P. = 77.6 PSIG I.E.H.P. = 99.5
CARD Nº 4
VALVES 4° AHEAD H.D.C.
ENGINE Nº 11
L.H. POWER CYL.
ATM.
REFACED VALVE AND NEW SEAT
CARDED Ev = 89.0% COMPRESSION = 100.0°
M.E.P. = 88.5 PSIG I.E.H.P. = 113.3

FIGURE 3
Effect of deep seating exhaust valve.

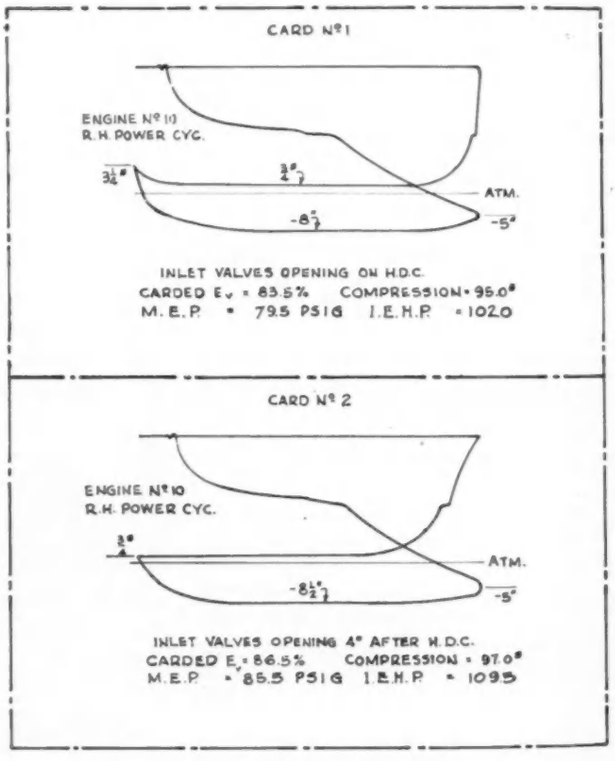

CARD Nº 1
ENGINE Nº 10
R.H. POWER CYC.
ATM.
INLET VALVES OPENING ON H.D.C.
CARDED Ev = 83.5% COMPRESSION = 95.0°
M.E.P. = 79.5 PSIG I.E.H.P. = 102.0
CARD Nº 2
ENGINE Nº 10
R.H. POWER CYC.
ATM.
INLET VALVES OPENING 4° AFTER H.D.C.
CARDED Ev = 86.5% COMPRESSION = 97.0°
M.E.P. = 85.5 PSIG I.E.H.P. = 109.5

FIGURE 4
Effect of extreme retarding of both cams to compensate for hardly noticeable wear.

the base circle. To avoid the resultant shock a "transition radius" or "ramp" is employed as depicted in Figure 8.

Two Master Cams

This figure is presented to show the comparative shape and size of the actual cam to that of the master. An explanation is in order. After the experimental stage was passed and actual production entered into, two master cams were made, one each for the intake and exhaust cams. To insure a high degree of precision and maximum speed of grinding a 22-inch wet wheel turning at 1000 revolutions per minute was used. A 3-inch roller followed the master cam which rotated at 20 revolutions per minute. These masters were attached to the camshaft undergoing the grinding by means of a key and an adjustable indexed centering hub and pin. The whole assembly was mounted upon a large external power grinder in such a manner that the camshaft and master could rock back and forth while being held with a constant pressure against the grinding wheel. The precision was within ±0.001 inch, quite satisfactory for large cams. It is of importance too as a variation of base circle or of ramp near point of intake-valve opening, can effect the timing of valve events at the ratio of ¾° of flywheel rotation per 0.001-inch deviation. Base circles have been found as much as 0.008 inch out of round and in such places that actually resulted in the entire camshaft being 6° out of time with a noticeably decreased power output even though properly timed according to conventional and available standards.

The ensuing indicator diagrams were taken in a conventional manner, using 180 pounds per square inch, gauge, per inch spring for the power cards and a 10 pound per square inch, gauge, per inch spring for the valve cards. The valve cards merely represent the bottom of the power cards but enlarged at the ratio of 18 to 1. Of course, the top one third of the valve cards must be disregarded as compression was being undergone by a rubber snubber placed around the piston rod to gently snub and completely stop its movement during the time that the cylinder pressure exceeded approximately 8 pounds per square inch, gauge. Thus the top line, or explosion stroke, must be completely disregarded. The line falling from the upper right to the left represents the actual pressure within the cylinder during the exhaust or scavenging stroke. The reversal of the continuation of this line, from left to right, indicates the cylinder vacuum during the intake or filling stroke. Its second reversal, from right to left, shows the pressure build-up from negative to positive during the beginning of the compression stroke. The earlier the compression stroke crosses the atmospheric line the better the volumetric efficiency, and therefore, the greater the amount of combustible charge induced.

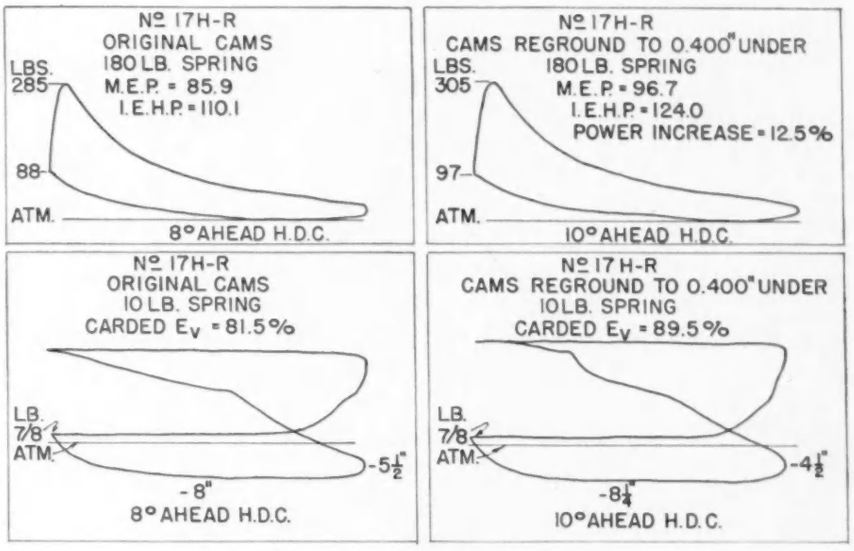


FIGURE 6

Effect of regrinding 0.400-inch under.

Worn Cam

Figure 3 is shown to illustrate the combined effects of a worn cam and a slightly deep seating exhaust valve. Card No. 3 is a valve card taken with the camshaft set for the intake valve to open 8° ahead H.D.C. or within a reasonable tolerance of the recommended 10° ahead. The exhaust cam displayed no appreciable wear, yet it existed sufficiently so that no reserve contour was left to offset a small amount of seat wear. The 4¾ pounds per square inch, gauge, pressure in the cylinder indicated a partial retention of burned gases which upon re-expanding prevented entry of a portion of the fresh charge. Replacing of seat and replacing of valve did not entirely correct the situation, closure was still early. Retarding of the camshaft 4° produced the net results shown by comparison with Card No. 4.

Cards No. 1 and No. 2 of Figure 4 show the effect of retarding another camshaft 4°. This cylinder was weak but examination of valves, seats and camshaft disclosed no appreciable wear. Valve cards and checking of camshaft timing proved that cam wear did exist. It was the investigation of conditions like these that led to the fabrication of the improvised cam-testing jig and ex-

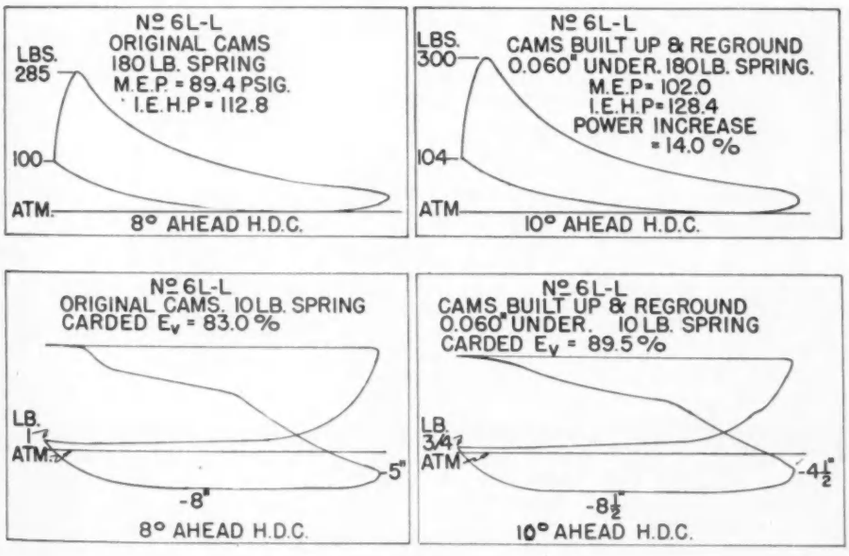


FIGURE 5

Effect of rebuilding and regrinding 0.060-inch under.

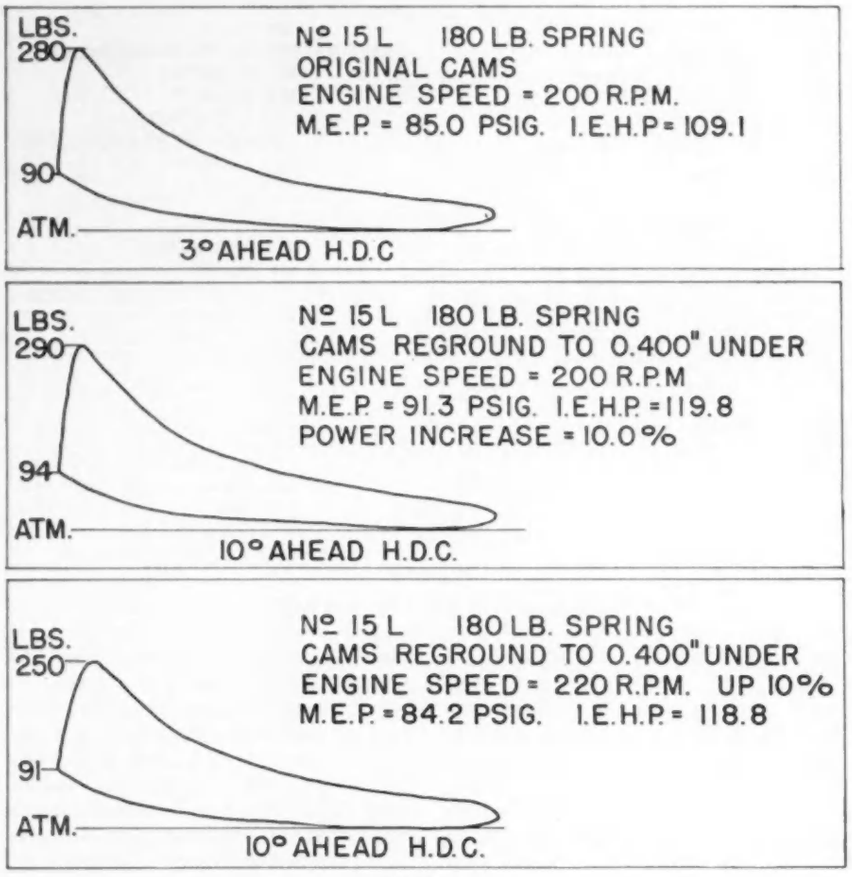


FIGURE 7
Effect of regrinding 0.400-inch under and increasing speed 10 percent.

perimentation to determine how late the intake valve could be closed in order to secure a maximum of combustible charge yet lose no appreciable amount of this charge in case the engine should operate considerably under speed.

New camshafts were secured and their performance and characteristics carefully checked in an engine selected as a "guinea pig" because of its accurate indicator motion and facilities for varying the compression loading. Camshaft timing was again checked in many settings, both early and late, and the indicator valve cards analyzed as well as power cards being compared. The camshaft we desired would require three changes: an earlier-opening and closing exhaust, and a later closing intake. Graphically the intake valve was closing at about the proper time, but actually it seemed many degrees early.

Our first job was to build up one side of each cam, without excessive distortion from heat. The opening side of the exhaust cam was built up slightly, the closing side of the intake cam, more. Then both cams were ground, one half at a time, using small wheels and the same size follower and maintaining the proper cam contours, follower acceleration, and velocity. When the job was done, which included considerable hand filing, checking in the jig, etc., the cams were ground a total of 0.060 inch under, but the cam spread and their relationship to each other was somewhat changed.

The results were as shown in Figure 5. The engine had been one of our best. Now, with 14 percent additional power output would the frame and bearings hold up, and if so, how about the heat transfer through the rings? Well, to shorten the story, that was 25 months ago. To date there has been no unusual maintenance, and bearings, rings and valves are holding their own. Of course, the maximum explosion pressures and total thrust upon the bearings is no greater under the greater load at rated speed than is sometimes encountered at subspeed operation. This had been predetermined.

Maximum Power

It is desired to stress one point. In all these cases where comparative cards are shown the engines always had timing and fuel mixtures adjusted for maximum power, and were loaded but operating at the same rated speed unless otherwise specified. With the exception of the camshafts no mechanical changes, even that of a spark plug, were permitted while these tests were being made.

As the machine shop in which the original work of regrinding was done, two years ago, was rapidly being converted to what we now term 100 percent defense work, we did not then have sufficient time to completely explore the field for a suitable hard surfacing material. We underground one set of camshafts sufficiently to make our desired changes and found it necessary to go to the extent of 0.400 inch undersize in base-circle diameter. They, too, proved quite satisfactory so a year ago after having had some half dozen rebuilt and converted shafts in successful operation for a year, the work was resumed.

Figure 6 includes both power and valve cards taken on an engine before

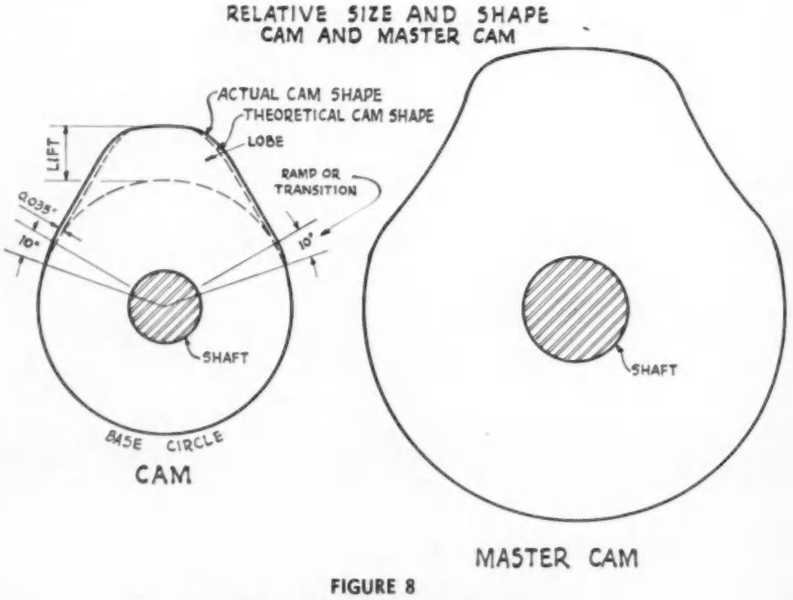


FIGURE 8
Comparison of actual cam and master cam.

Texas' Deepest Hole

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● J. S. Abercrombie Company has drilled to a new record depth for Texas . . . . 14,378 feet, or 650 feet below Texas' previous record . . . . testing formations below the already deep Old Ocean Field. Drilling of McDonald B-1, the record hole, was stopped after 6 months and 2 days, to plug back for production near the 11,000 foot pay.

That's a lot of footage and a lot of drilling time, and is a genuine testimonial to Link-Belt Super Hyper Precision Rotary Chain, which was used 100% on this job. Particularly is this true since no special arrangements for extreme drilling depths were made. A derrick and rig from an offset location were merely skidded over, set up, and spudded in . . . . just the average Old Ocean drilling equipment. However, it's a well known fact in oil field circles that average drilling at Old Ocean demands the best in equipment. Link-Belt Chain has drilled more than *200 miles* of hole at Old Ocean.

LINK-BELT COMPANY

Indianapolis, Dallas, Houston, Los Angeles, Kansas City, Mo., New York, Toronto. Distributors in all fields.

Also manufacturers of silent chain drives, roller chains, roller and ball bearings, and other transmission equipment, mud screens and cranes.

LINK-BELT CHAINS

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YOU CAN MEET THEM WITHOUT INVESTING IN EQUIPMENT

AT A TIME when the war's demands are added to peace time requirements, manufacturers are compelled to face new problems.

When the finish specifications read "Parkerize" there is no problem—although you may not be equipped to apply it. In the Houston area you have complete metal finishing service—including Parkerizing on a jobbing basis—in the plant of the Wilson Electrical Equipment Company. Here are complete, modern facilities for applying this rust resisting finish—efficiently, effectively and economically—whether your requirements are for a hatful or a carload.

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PARKERIZING is a chemical treatment for iron or steel, resulting in a surface that can be stained, oiled, waxed or painted and is substantially resistant to rust.

BONDERIZING is a chemical treatment for iron, steel or zinc that insures cohesion of applied coatings of paint, enamel or lacquer, resulting in longer lived, rust-resistant finish.

PARCO LUBRIZING is a chemical treatment for iron or steel friction surfaces, in mechanical assemblies, that improves bearing properties, retards wear and galling.

and after some of the heavily underground cams were installed. The valve timing, acceleration, etc., are the same as for the cards shown in Figure 5 with the rebuilt cams.

Figure 7 displays power cards from a unit which for various reasons is sometimes operated up to 10 percent above rated speed. No adjustments were made between the taking of Cards No. 2 and No. 3 as is shown by the apparently late ignition of Card No. 3. The lowered compression pressure, maximum explosion pressure, and M.E.P. show the effect of insufficient time for complete filling of the cylinder by the fresh combustible charge.

Metallurgy

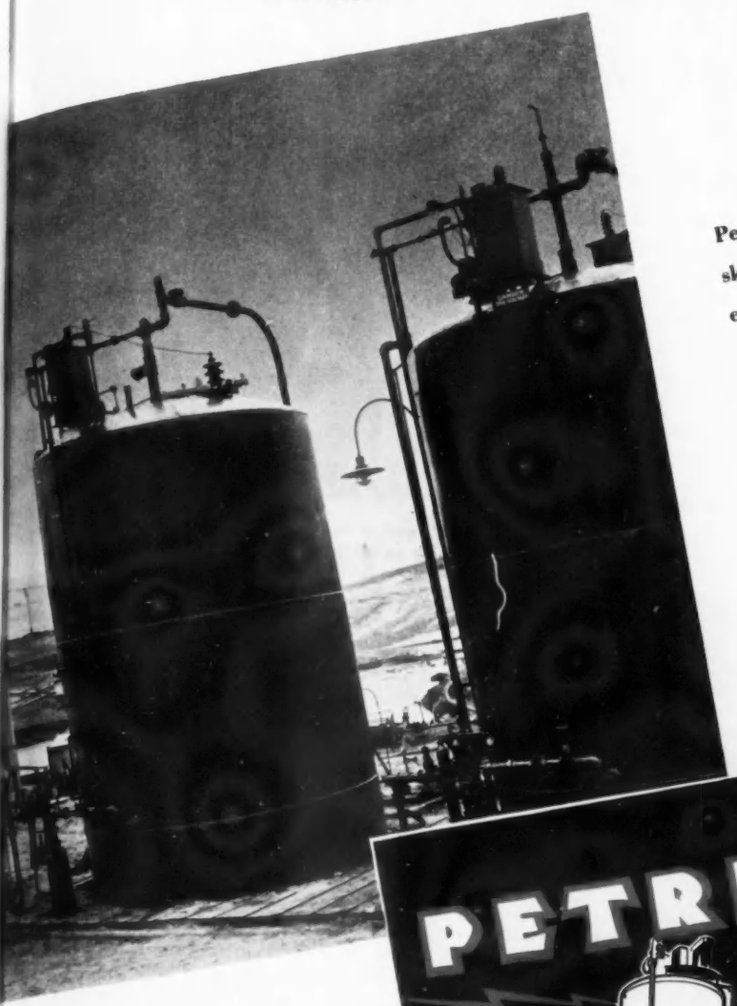
Now then, to touch the fringe of metallurgy envolved in rebuilding cams. As far as results are concerned it apparently makes no difference whether you undergrind, within limits, or completely rebuild and regrind—it is the shape of the cam that counts. Most cams are forged steel, usually a low-carbon steel, some are surface hardened, some are not. The hardness may vary from 130 in some to 600+ Brinell in others. The average of my experience has been under 200 Brinell. At this hardness the cams are soft enough to have undergone wear, apparent or otherwise, in 10 years of operation. A good chromemoly rod, applied with either torch or arc, may attain a hardness of 300 Brinell. The real hard facing alloys are fine, if your priority will secure them and you can get wheels to grind it. The irregular shape of camshafts cause most of the heat treaters to talk about distortion and the added cost of straightening within ± 0.003 inch which is not close enough.

Plain flame-hardening performed by experienced men and followed by an air quench, then stress relieving, was the answer to our problem, and it raised the Brinell hardness of the cam faces from 190 to 500+ with no distortion.

A natural question arises, "Is it worth while to go to the necessary expense and work at this time to revamp some old engines?" The answer is if installed direct-connected compressor capacity is worth $50.00 per boiler-horsepower now, our additional boiler-horsepower thus gained has cost much less than 10 percent of what it is worth.

It is my desire to mention the assistance in this work of Mr. Bennett Schock, of General Petroleum Corporation, for his timely suggestions, untiring assistance, and limitless patience in testing of the "guinea pig" engine, and Mr. Arthur Bender, of H. D. Biggs & Son, for making available his experience in producing that funny looking master cam and really placing this cam regrinding on a production basis.

PUT MANHOURS WHERE THEY ARE MOST PRODUCTIVE



Petreco Electric Dehydrators, automatic in operation and skillfully incorporated into lease flow systems by Petreco engineers, result in highly desirable time savings.

On the lease of one California operator, the installation of a Petreco unit permitted two men to be diverted to other lease duties. These experienced men were far more productive in their new status, and a labor cost of $330.00 per month was eliminated from the dehydrating cost sheet.

Petreco's automatic operation, vapor-tight flow system and wide adaptability make many lease economies available to operators. Petreco research and engineering provide a valuable consultation service to producers; investigate it now.

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DEHYDRATING DESALTING

PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. ACCESSORIES

Permanent Mounting Guards Water Can

Rim welded to steel bed of service truck locates water container and protects it from other materials.

A PERMANENT setting for the water can on the servicing truck is provided by welding a ring of the proper diameter near one corner of the steel truck bed. This ring, attached to the deck with two or more angle braces, is set high enough so that any spill from can may drain off readily and not form a puddle to promote rust of the platform.

In addition to retaining the drinking water can in place over rough terrain, the ring also protects it against crushing, cutting or damaging by the shifting of heavy equipment likewise carried on the truck.

Height of the ring is kept below a dimension which would interfere with the faucet or drinking water outlet on the can. When in place, the outlet is set toward the rear of the truck and prevented from rotating into possible damage on the road by being tied with heavy cord to the nearest free stake hole on the truck body.

2. MAINTENANCE

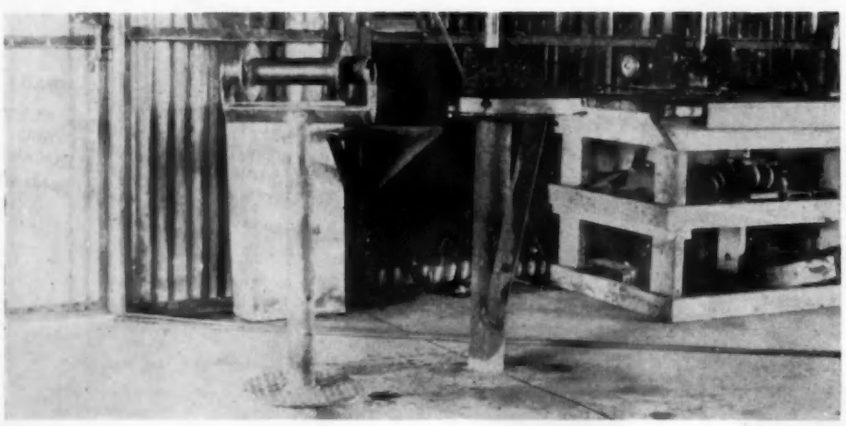
Adjustable Support Speeds Bench Work

SUPPORTING the free end of pipe, rods or other long work being cut, threaded or drilled, is sometimes difficult without enlisting the aid of another man. To speed up this type of work, and eliminate the need of extra help, the mechanic for one company built a work support or outboard bearing (bench, vise and drill-press plate high), with a wide roller at the top of the riser.

The unit itself, built on a light plate disk, is welded to the top of a short section of 8- or 10-inch pipe, the pipe base being filled with concrete to increase its weight and add resistance to overturning.

The support is not fastened to the floor, but may be canted and rolled on one edge as a drum is moved, permitting the device to be aligned with the work.

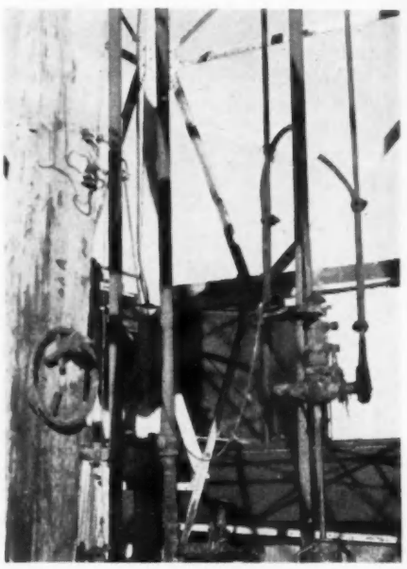
The roller is mounted so as to turn freely, with a curved guard or shelf below the roller, serving the double purpose of catching dirt and oil, and of providing a surface to which work may be clamped if it must be held rigidly in place during operations.



Pipe standard with flanged roller, set on weighted stand for ready portability, supports outer end of rod, bar or pipe and enables one man to handle without danger of equipment injury.

3. CONTROLS

Gadget Shorts Spark To Prevent Runaway



Parted sucker rod string releases device for throwing switch in magneto circuit and assures halt.

IN a pumping well where conditions cause rods to part at intervals, a short circuit to stop the pumping engine has been installed which is entirely automatic in operation.

Wiring is run from the magneto to the headache post and connected to an ordinary knife switch. Above the switch are two screw eyes with a heavy nail slipped through both openings. A heavy cord is tied to the nail and to the knob of the switch, with the lower end weighted by any heavy object. A second cord reaches from this nail to a small platform attached to the polish-rod clamp where a second heavy weight is loosely placed.

If the rods part, the sudden violent

51,700 Underground Horses and what they can do for you

51,700 horsepower is the energy put directly behind a Lane-Wells gun perforator bullet when the operator closes the firing switch.

This tremendous impact drives the bullet through as many as three cemented strings of casing and sends it far out into formation to open channels through which oil can flow.

To control the power of the gun and place each hole exactly where you want it, Lane-Wells developed a system of line calibration to assure accurate checking of measurements. To protect your men and your investment in your well Lane-Wells installed a five-point safety system to guard against pre-mature firing.

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LAMTEX Left-Hand Packer Assembly affords a new and much more satisfactory way to pump wells—particularly low fluid level wells. You remove the tubing and run a LAMTEX Assembly on the sucker rods with a screwoff mandrel. You then go back with a working barrel or insert type pump and produce thru the casing. When necessary to pull the pump for repairs you DO NOT dump the fluid. Eliminates 30,000-40,000 lbs. of steel and a lot of maintenance.

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motion of the pumping equipment dislodges the weight which pulls the nail from the screw eyes, allowing the first heavy weight to close the circuit and short out the magneto.

4. SAFETY

Shaft End Protection Prevents Injuries

Tin can with attached locating ears serves to shield exposed shaft and forestall snagged clothing.

NECESSARY guard installations may be reduced and the amount of materials cut appreciably if exposed shaft ends are allowed to project through the guards, with proper safeguarding of the shaft itself.

One producer uses ordinary 1-gallon paint or 2-pound coffee cans for shaft-end covers, effectively preventing contact with the shaft and possible injuries to personnel. The cover is attached to the bracket carrying the end-shaft bearing with a pair of light sheet-metal ears or lugs, formed to fit the contour of the bracket, and riveted to the can in positions which allow the outer ends of the lugs to be carried on two of the bolts holding the outer plate of the bearing assembly.

The can used for shaft protector may be painted inside and out to extend its service life, and if placed to tilt slightly toward the open end, any moisture collecting will drain away without tending to rust the shaft end.

5. ELECTRICAL EQUIPMENT

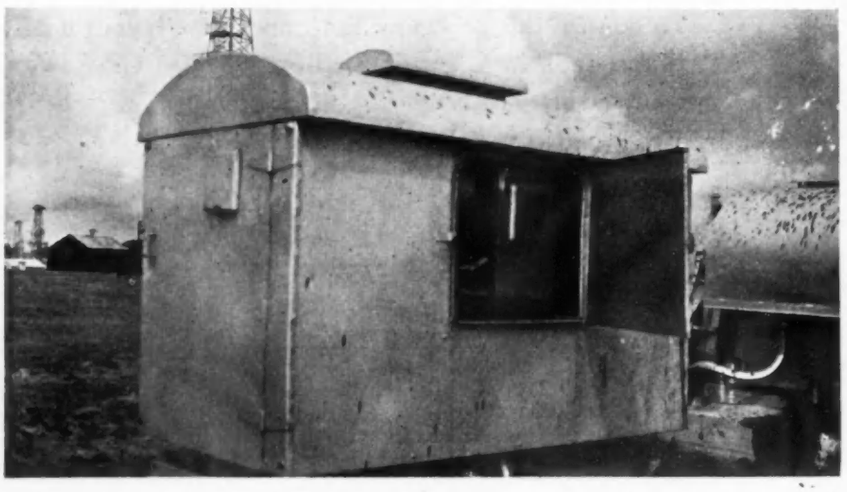
Transformer Housing Assists Portability

AMPLE protection for the portable transformer used to step down high-voltage power for the drilling rig or pumping equipment is afforded by a sheet steel house adopted by one company.

Set high enough above the base or supporting skid to insure adequate ventilation, the steel walls and reef provide ample weather and pilferage guard, tightly closing doors in the ends permitting replacement of transformer units without dismantling.

A door, heavy enough to withstand prying, may be padlocked over the starting switch at one side of the transformer bank, the top of the door being protected by the overhanging eave, while other side of the opening are protected by overlap between door and flanged side sheet.

Provision is made for tying in to high tension lines through approved-type fittings, with short cable being provided for low-voltage current to motors.



Ventilated house, formed of steel with close fitted closures to prevent tampering or trespassing, aids in handling of portable units for stepping down current for local motors.

Seismic salutation!

WHEN our PT boats roar out over the horizon to "expend" an enemy ship we like to ponder over the possibility that the fuel and explosives which make their heroic missions possible may have come from some of the numerous oil-bearing structures which we have successfully mapped.

SEISMIC EXPLORATIONS, INC., HOUSTON

PRACTICAL OPERATING *Hints* FOR THE PIPELINER

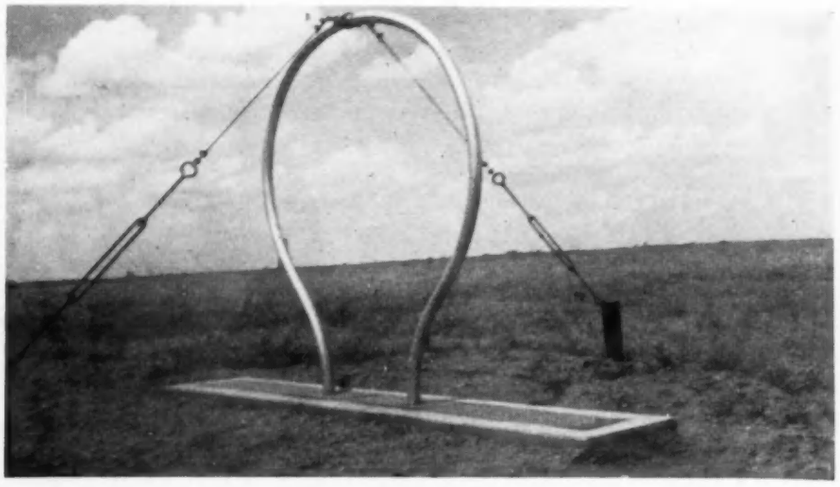
$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. LINE PROTECTION

Telescoping Covers Guard Loop Pits

VERTICAL expansion loops in long lines, especially those carrying gas under high pressures, require less support than horizontal loops, and are less apt to impose severe misalignment stress on the remainder of the system. Such loops must be supported to prevent side sway and to limit travel of the open ends of the loop in the desired plane.

One such line carries the loops in shallow concrete boxes, with slotted ends in which the line may travel under expansion or contraction force. The loop itself is centered in the box, with wire lines and turnbuckles to provide proper guying of the unit in a vertical plane. The shift in length is then absorbed by the loop between ground level and guy-line clamp, eliminating the need of providing slack at the point of attaching the supporting lines.



Slotted plates matched with sections slipped over line loop before welding in provide for lateral motion without opening gap into space in which line tie-ins are free to shift.

The pit or box is covered with five pieces of light steel or grating. The two end slabs and the block set between the legs of the loop are slotted to permit pipe travel without binding or cramping the pipe. Two cover plates, each with hole just large enough to admit the pipe, are slipped over the loop before it is welded into the line, these covers traveling with the line as it elongates or shrinks, and always providing seal for the slot in the plates below. Such provision guards against accidental injury of animals or personnel by the slotted base units.

Anywhere!

Buckeye Trenchers minimize right-of-way work. Dig in any soil. Ruggedly constructed. Faster. Readily maneuvered. Model 12 (shown) for gathering, gasoline and small natural gas lines. Models 32 or 48 for main lines. The standard trenchers for pipeline work.

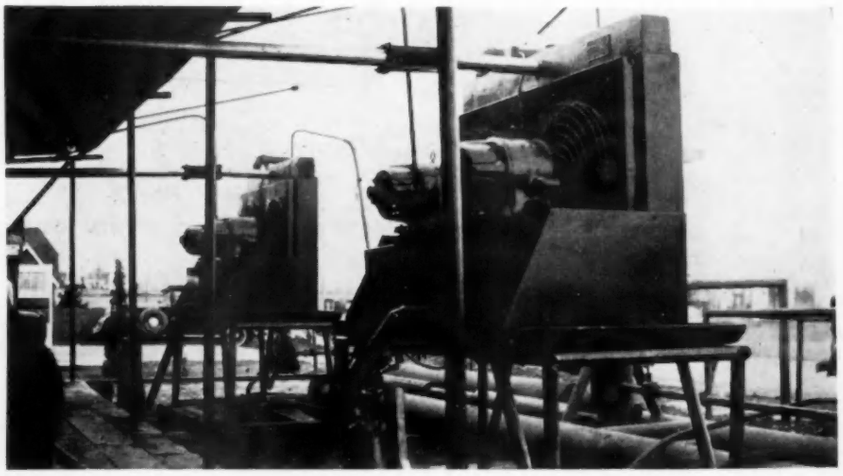
BUCKEYE TRACTION DITCHER COMPANY
Findlay, Ohio
Built by Buckeye
TRENCHERS. SHOVELS. CRANES
BACKFILLERS. TRACTOR EQUIPMENT.

2. COOLING SYSTEMS

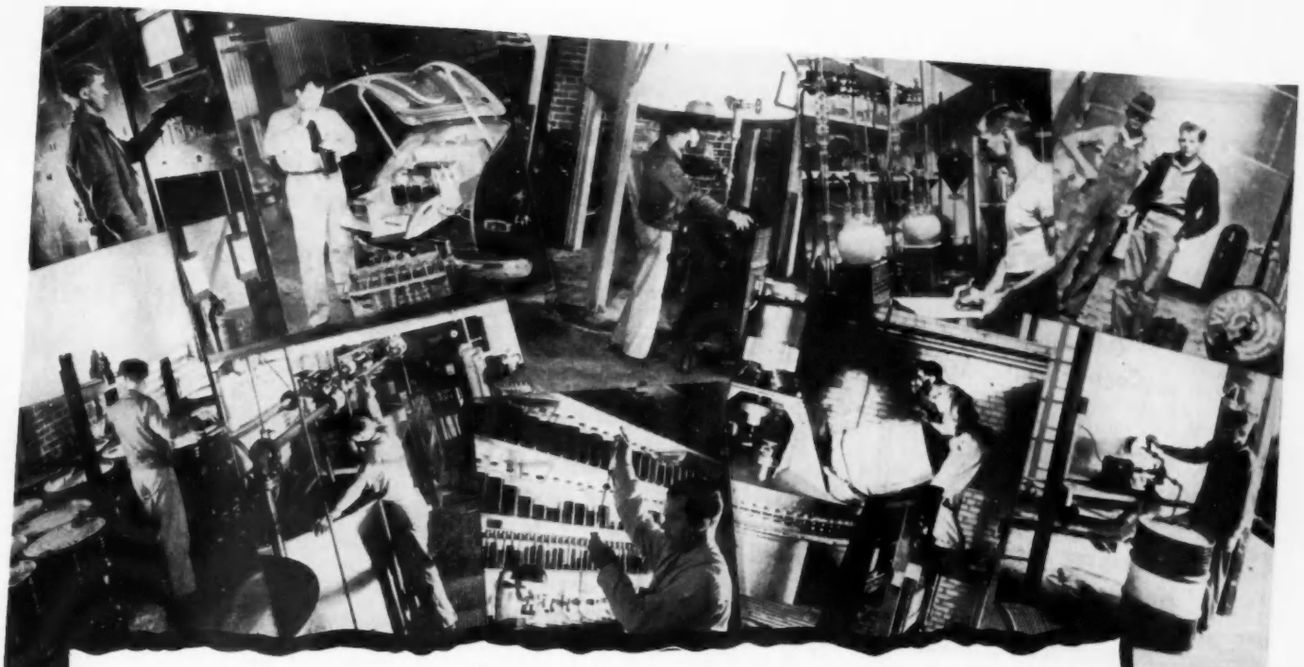
Segregated Radiators Aid Heat Transfer

REMOVAL of the radiators from the station building eliminates a source of much heat, and also simplifies the problem of keeping down dust which would normally be stirred up when sufficient air is circulated through a small building to provide the required flow through the cooling units.

By setting the radiators on elevated stands outside the building, and driving



Where electric fan drive is available, remote mounting of units provides better air access and betters station conditions by reducing amount of heated surface within structure.



To all Visco Employees *

Visco has an important job to do to help win this war. We have to be sure each and every customer is receiving the best possible efficient service which means the driest possible oil at the lowest possible cost. A dry oil reduces the amount of shipping facilities necessary and a lower cost ultimately will be an economy to the Government. This economy may be small, but multiplied by millions, it will produce its ultimate benefit. Visco - the Modern Emulsion Breaker - will not be found wanting in its important task.

Sincerely yours,

F. H. Thorne

F. H. Thorne
President

*excerpt from a general letter to all Visco employees.

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COMPANY
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Phone 43943
309 Kennedy Building
TULSA, OKLAHOMA

the fans with weatherproof motors, the cooling system may be so designed as to provide the desired slope to water lines for proper flow to the engines without the introduction of low spots which might freeze up during cold weather.

The stands for such elevated radiator mountings may be built up from scrap pipe, welded to give desired rigidity, and of sufficient size to permit servicing.

Use of direct-connected motor drive on the fans avoids the exposing of belt drives to weather hazards, and allows the drive either to draw air through the radiators or force draft, as desired.

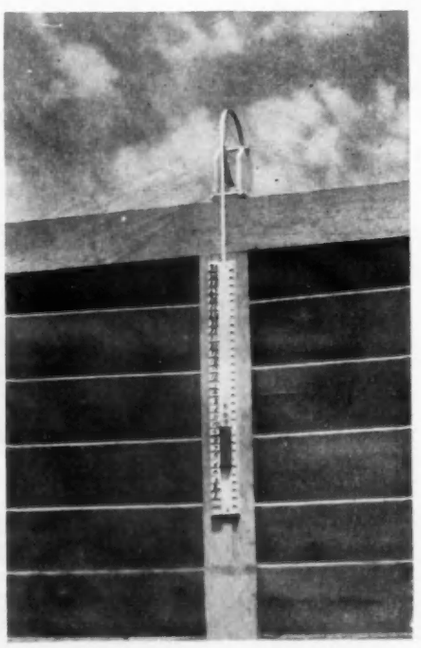
3. GAUGES

Simple Device Checks Tank Water Level

FACILITATING the operation of the plant cooling system a gauge, constructed of materials on hand and calibrated to inches of water (rather than volume), tells the operator at a glance whether or not the water level is safe.

Composed of nothing more than a small iron weight, an old tank strap, a child's tricycle wheel and a bottle float, the gauge is fool-proof, inexpensive yet sufficiently accurate for the job it performs.

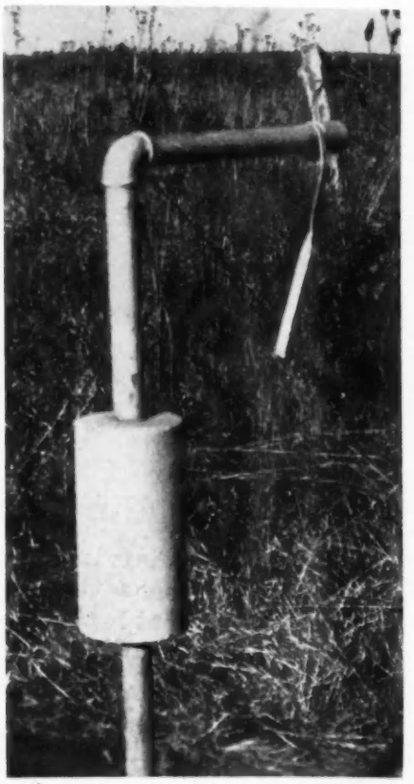
The face of the gauge contains a vertical groove in which the weight or indicator moves. Surmounting the gauge and in line with it is the small tricycle wheel with a fixed axle. Attached to the indicator is an old tank strap which extends over the periphery of the wheel on top and which contains the float on the other end inside the tank. The float is nothing more than a closed bottle, properly weighted with sand for exact balance of the indicator; it is restrained from a sidewise motion by a cage.



Tricycle wheel, stripped of tire, serves as reversal means for tank gauge line's fluctuations.

4. DRIP PROTECTION

Locking Cover Deters Tampering and Theft



Ingenious latch within shield guards drip outlet cock, but is readily released with proper key.

PROTECTING stops on lines connected to pipe-line drips has been a problem since the first drip was installed, but one gas company has succeeded in developing a protector which prevents unauthorized persons from tampering with the stop without actually demolishing the fittings. A riser of 2-inch pipe leads from the drip outlet in a vertical position, high enough so that the stop can be operated by a man standing beside the equipment.

A stop in this riser is placed between the two halves of the riser to control the flow of fluid when the drip is pressured prior to evacuation of the gasoline, oil or water. An 8-inch sleeve with a 2-inch hole in the upper flat end—the lower end is open—slides easily up or down on the 2-inch riser, but has a slot in one side which engages a latch that can be released only by a peculiarly shaped handle possessed only by the line walker and the drip truck driver.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

RENEWED pressure for a general crude-price increase and issuance by WPB of a new and modernized P-98-b were the outstanding incidents of a week otherwise devoid of major oil developments.

The fight against OPA's resistance to higher crude prices developed along two fronts as members of Congress discussed the possibilities of legislative action and Administrator Harold L. Ickes laid the groundwork for an appeal to Stabilization Director James F. Byrnes.

The new P-98-b laid down definite procedures for acquisition by operators of materials for discovery, development and depletion; construction, and maintenance, repair and operation.

While there were few concrete changes in the situation, Washington officials disclosed increasing apprehensions over the future supply situation, warning that there may be less oil and gasoline available next year-end than during the past winter.

Their fears were based on constantly increasing withdrawals of supplies by the military, now preparing to launch new onslaughts against the enemy at any one or more of a number of points around the world.

Railroad deliveries to District 1 reached a new high record during the week ended May 8 at 982,498 barrels daily, an increase of 2257 barrels over the preceding week, but stored supplies continued to dwindle and dropped to a new all-time low of 25.5 percent of normal, it was reported by PAW.

Tank-car deliveries during the week were 965,582 barrels daily, an increase of 2784 barrels over the previous week, but kerosine shipments in drums dropped 527 barrels to 16,916 barrels.

Ickes May Appeal Price Fight to Byrnes; Congress Considers Legislative Action

»

New P-98-b Issued; Procedure for Obtaining Materials Changed

»

Eastern Stocks Continue Dropping Despite Record Deliveries

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

New P-98-b Requires Advance Filling of Requirements on Controlled Materials

A new P-98-b, streamlining the regulations under which operators secure new materials through PAW, was issued by WPB over the week-end.

The new order is intended to simplify the procedure for securing materials for (1) discovery, development and depletion of oil and gas fields, (2) construction operations, and (3) maintenance, repair and operating supplies.

For the handling of material requirements for discovery, development and depletion, operators are divided into two groups, one consisting of United States operators who drilled 40,000 feet or more of hole during 1942, (consisting of approximately 100 operators who in the past have drilled one-half the total United States footage) and the other including all other United States operators and Canadian operators.

To obtain controlled materials, the large producers will be required to submit Form PD-873, filled out in detail to show the quantity of materials required, at least four months prior to the calendar quarter in which the materials are to be delivered. The form is to be filed with the PAW district office for the area in which the material is to be used; when approved, an allotment number and preference rating will be assigned which may be used on delivery orders without further submission to PAW.

The small operators and those in Canada will obtain controlled materials by filing Form PD-873 with either the PAW district office of the Canadian oil controller not less than one month prior to the time the material is to be delivered, and will receive allotment numbers and preference ratings for use on delivery orders.

Manufacturers and suppliers of tubular goods, knowing that the advance orders on their books from the large operators will represent, on the average, just one half the total United States requirements, will be able to arrange production scheduling and inventories accordingly.

To obtain non-controlled materials, all producers will submit to either the PAW district office or the Canadian oil controller copies of delivery orders for $100 or more, showing the serial number assigned on Form PD-873 and the use to which the material is to be put. If any single item amounts to $500 or more, or the total for all items is $1000 or more, approval must be obtained before the order is placed, but if amounts are below those limits approval will not be required and the copy of the delivery order filed will be for information purposes only.

Full Text P-98-b on page 38

The method of securing both controlled and non-controlled materials for construction for marketing, natural gasoline, refining or transportation projects is covered in detail in Schedule E of the order, and in all cases will require the use of Form PD-200 to obtain priorities assistance.

MRO (maintenance, repair and operating supplies) materials for all branches of the industry are to be secured by the use of a preference rating of AA-1 and an allotment symbol MRO-P-98-b, with the following limitations:

1. Aluminum for MRO may not be obtained in amounts exceeding 100 pounds per calendar quarter, except by special allotment from the WPB aluminum and magnesium division.

2. When the cost of any single item is $500 or more, prior submission of the delivery order to the PAW office in Washington or the Canadian oil controller will be required for all branches except domestic production, orders for which must be submitted to the district PAW office.

3. When the total cost of all items is $1000 or more, but no single item is $500 or more, prior submission of the delivery order to the PAW district office or the Canadian oil controller will be required.

4. When the total cost of all items is less than $1000, but more than $100, with no single item of $500 or more, a copy of the delivery order is to be submitted to the PAW district office or the Canadian oil controller. These filings will be for information only and approval will not be required unless steel valves, cast-iron valves over 12 inches or industrial control instruments are involved, in which cases special provision of Schedule D of the order will apply.

5. Emergencies involving actual breakdown or suspension of operations may be handled by telephone, telegram or letter to the Washington PAW office.

Four general provisions of the order apply alike to production, construction and MRO operations:

1. Operators are not subject to the provisions of CMP regulations Nos. 2, 5 or 6, or Paragraphs (1), (S), (S-1) and (U) of CMP Regulation No. 1; nor will the provisions of WPB (construction) limitation order L-41 apply to operators under P-98-b.

2. In the case of production or construction projects, an operator, if neces-

sary, may allocate a part of his controlled materials allotment to a Class A controlled materials product manufacturer or to a contractor (either of whom becomes a secondary consumer) for reallotment or the placement of controlled material orders.

3. Any delivery order placed under the terms of P-98-b will constitute an authorized controlled-material order and will be rated and have the same status as though placed under CMP regulation No. 3.

4. Paragraph (L) gives a form of certification which may be used on all delivery orders instead of the multiplicity of such forms required under numerous CMP regulations.

Accompanying the order were schedules: A, defining maintenance and repair; B, defining uses which cannot be classified as petroleum industry uses; C, listing materials used in the industry which are excluded from P-98-b except under specifically defined circumstances; D, listing specific materials which, when ordered for MRO purposes, require handling differing in some respects from the geenral MRO provisions; E, listing in tabular form the requirements for construction projects, and F, defining the boundaries of the PAW districts.

Coal Shortage Slows Oil Burner Conversion

With possibilities of a coal shortage outweighing those of an oil scarcity, the OPA has modified its conversion program and has released consumers in 13 states, who last year received a basic heating oil ration of less than 10,000 gallons, from all efforts to convert their heating plants.

In New England and in Florida and Georgia, conversion requirements were lifted because of coal and transportation shortages, while in North and South Dakota, Nebraska, Kansas and Missouri conversion of small consumers was abandoned because of the nearness to refineries and the availability of truck transportation coupled with the long haul required for coal.

In the remainder of the rationed area —New York, Pennsylvania, New Jersey, Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Ohio, Kentucky, Indiana, Illinois, Michigan, Wisconsin, Iowa, Minnesota, and the District of Columbia—the conversion campaign will be continued.

To date, Price Administrator Brown announced, the conversion program has accomplished a saving of more than 60,000,000 barrels a year, more than half the total aimed at, and conversions this summer by large consumers will further raise the total.

At the same time, however, Brown declared that the supply crisis in the rationed area will not permit the consumption of fuel oil for pleasure cruising on the East Coast.

Transportation Director Joseph B. Eastman, in line with OPA's promise the East Coast consumers could fill their tanks this summer, appealed to bulk suppliers and purchasers to initiate round-the-clock loading and unloading by tank trucks. This, he said, will enable the trucks to take over more of the short-haul traffic, releasing tank cars to haul oil into the East.

Higher Price Resolution Introduced in House; Ickes Asks OPA to Reconsider

A fight against OPA's resistance to higher crude prices was developing along two fronts. Ickes took the matter up again with Prentiss Brown, director of OPA, and threatened to go to Stabilization Director Byrnes. In Congress, a resolution was introduced that called on the President to grant an immediate increase of 35 cents per barrel.

Refusing to accept the OPA decision as final, Ickes took the matter up anew with Brown during the week, disclosing that he had lunched with the OPA head and discussed the matter informally.

Ickes admitted he had not won Brown over to his way of thinking, and said he had asked for a reconsideration.

"If I don't get a reconsideration, I will have to go to (Stabilization Director) Byrnes, I guess," he said.

Congress May Act

Determination to press for an increase in crude prices was evidenced in Congress during the week, with Representative Wright D. Patman of Texas, chairman of the House little business committee which recently investigated the price situation, introduced a resolution May 12 calling on the President and the interested agencies to grant an immediate increase averaging at least 35 cents per barrel.

Patman's resolution also declared it to be the "sense of the House" that such additional increase should be authorized, if necessary, as will be instrumental in promoting oil exploration, development, discoveries and production "of sufficient oil to aid in the effective prosecution of the war as well as domestic interests of our people."

Refusal of Price Administrator Brown to accede to the suggestion of Administrator Ickes that a general increase be granted in crude prices brought from members of Congress a threat of legislative action to force the raising of ceilings.

There are indications that the matter will be pressed with considerable vigor by both the industry and members of Congress who have interested themselves in the matter. Possibilities of the adoption of a more favorable attitude by the OPA are seen in some quarters in the termination next month of Sumner T. Pike's service as director of the fuel price division, to return to Philadelphia to resume his duties as a member of the Securities and Exchange Commission, to which he has been renominated for another term by President Roosevelt.

Brown Tries to Explain

Meanwhile, in an apparent attempt to justify his position, Brown on May 13 issued a statement declaring that "in line with the policy of providing individual price relief where necessary for crude-oil producers" OPA in slightly more than a year had approved higher ceilings in more than 40 cases.

Brown asserted that of a total of 53 petitions filed since March, 1942, for increasing in ceiling prices because of operating losses, because ceilings were out of line with those for comparable crudes, or because prevailing maximum prices did not yield sufficient margin to enable the producers to continue old production and drill new wells, relief was granted to 43 applicants, 6 petitions were denied and 4 are still pending.

The three "leading" increases, he said, were those of 25 cents per barrel granted to producers of Pennsylvania type crude in March, 1942; 15 cents to producers of Wyoming black oil in February, 1943, and gravity increases up to 25 cents to producers of California heavy crudes in March.

"The other 40 actions granting ceiling increases were local in character and were designed either to correct inequalities or to permit continuance of high-cost production in stripper areas where the purchaser was willing to absorb the increase," Brown said.

"In one case an increase was granted where secondary recovery was planned to increase total recovery, the refiner expressing a willingness to absorb the permitted increase so it would not be passed on to the consumer.

"In all the 43 cases where increases were granted there was no corresponding increase in the maximum prices of products made from these crudes except in the cases of California and Wyoming heavy crudes. In these situations adjustments were made in the prices of fuel oils and asphalt to compensate the refiners for the increased costs of crude, after careful consideration of all factors involved."

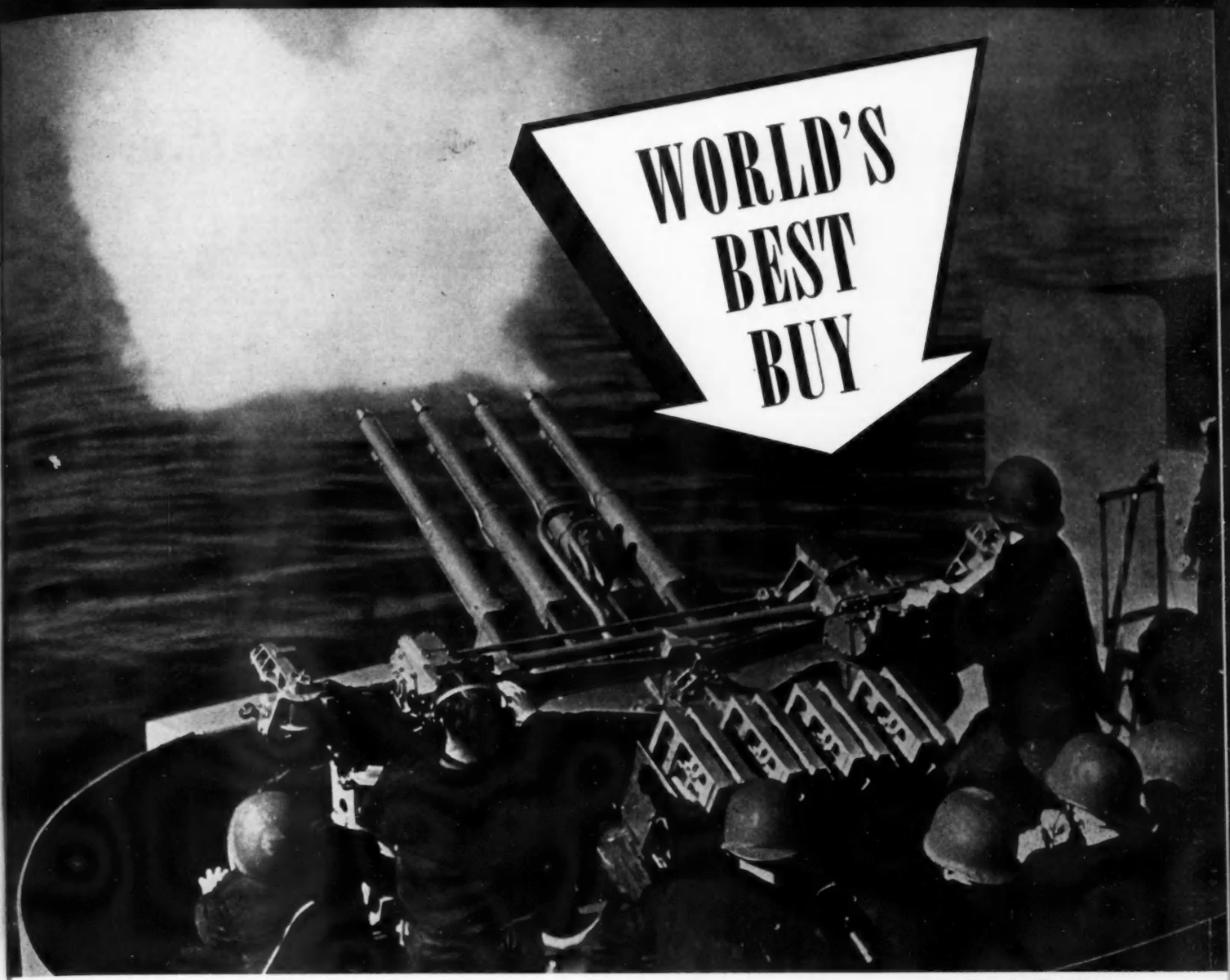
Wildcat Subsidy Has No Friends

OPA plans for encouraging wildcatting by government loans have met with a more than cold reception in PAW.

Even though admitting that it is probable such loans would lead to increased prospecting, PAW officials maintained their position that the way to encourage new discoveries is to give operators funds from present operations by increasing crude prices.

However, it was pointed out, the actual decision whether to adopt the subsidy method of encouragement is not up to PAW but to OPA and the Reconstruction Finance Corporation, and it was disclosed by Administrator Ickes that PAW is not prepared to make any recommendations on the matter.

Ickes said his views on subsidy were well known. The OPA plan, he said, would put the government into the oil industry, without any doubt, and, he added, "I do not favor the government getting into the oil industry."



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Preference Rating Order P-98-b, as Amended May 15, 1943

The fulfillment of requirements for the defense of the United States has created a shortage in the supply of critical materials for defense, for private account and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense.

Section 1041.2 Preference Rating Order P-98-b Purpose and Scope

(A) Purpose

The purpose of this order is to make available methods by which an operator may acquire deliveries of material for essential production and construction operations as well as for maintenance or repair purposes or as operating supplies. This order also applies to the use of material in certain construction operations and establishes uniform standards by which operators in the petroleum industry may obtain and use their necessary material requirements for the effective continuance of necessary petroleum industry operations.

From time to time supplementary orders or directions will be issued to operators covering the use of allotment numbers, symbols or preference ratings or the delivery or use of material and informing them of modifications in the programs and policies of the war production board of the petroleum administration for war.

(B) Definitions

(1) "Person" means any individual, partnership, association, business trust, corporation, governmental corporation or agency, or any organized group of persons, whether incorporated or not.

(2) "Operator" means:

(i) Any person located in the United States, its territories or possessions to the extent that he is engaged in the petrolum industry (domestic operator); or;

(ii) Any person located in the Dominion of Canada to the extent that he is engaged in the petroleum industry and to whom and in whose name a copy of this order or of Preference Rating Order P-98, extended and amended, is or has been specifically issued and to whom a serial number has been assigned (Canadian operator).

(3) "Supplier" means any person with whom a delivery order is placed for delivery of material to an operator or to another supplier.

(4) "Petroleum" means petroleum, petroleum products and associated hydrocarbons, including but not limited to natural gas.

(5) Except as provided in Schedule "B" hereof "Petroleum Industry" means any operation directly incident to:

(i) The discovery, development or depletion of petroleum pools (production);

(ii) The extraction or recovery of natural gasoline and associated hydrocarbons (natural gasoline production);

(iii) The transportation, movement, loading or unloading of petroleum other than natural gas (transportation);

(iv) The processing, refining or compounding of finished or unfinished petroleum products (refining);

(v) The distribution or dispensing of petroleum products (other than natural gas) and the storing of petroleum products incident thereto (marketing):

And shall include for each of the above listed branches of the industry, to the extent applicable therein, the investigation into more efficient or more effective methods of conducting petroleum industry operations by means of research or technical laboratories.

(6) "Material" means any commodity, equipment, accessory, part, assembly, or product of any kind.

(7) "Production Operation" means any use of material for construction, expansion, improvement, reconstruction, remodeling, alteration, maintenance, repair, or replacement incident to production.

(8) "Construction Operation" means any use of material for construction, expansion, improvement, reconstruction, remodeling, alteration, maintenance, repair or replacement incident to natural gasoline production, transportation, refining or marketing.

(9) "Maintenance or Repair" means that use of material specified in Schedule "A" hereof.

(10) "Operating Supplies" means any material (other than material used for maintenance or repair purposes) which is essential to and consumed in the petroleum industry and which is normally carried by an operator as operating supplies or which is normally chargeable to operating expense.

(11) "Controlled Material." "Class A Product" and "Class B Product" shall have the same meanings, respectively, as in CMP Regulation No. 1 of the War Production Board.

(12) "Allotment" means a determination by any operator or secondary consumer as to the portion of its allotment of controlled materials which may be received by an operator or a secondary consumer, as the case may be.

(13) "Delivery Order" means any purchase order, contract, release or shipping instruction which constitutes a definite and complete instruction from a purchaser to a seller calling for delivery of any material or product. The term does not include any contract, purchase order, or other arrangement which, although specifying the total amount to be delivered, contemplates that further instructions are to be given.

(14) "Authorized Controlled Material Order" means any delivery order for any controlled material as such (as distinct from a product containing controlled material) which is placed pursuant to an allotment as provided in paragraph (J) of this order or which is specifically designated to be such by any regulation or order of the petroleum administration for war or the war board.

(C) Restrictions on Scope of Order

(1) No operator may use an allotment number or symbol or apply a preference rating to secure delivery of any material which may be acquired under this order other than in accordance with the applicable provisions of this order; provided, however, that an operator who, but for the terms of this subparagraph, would be required by Priorities Regulation No. 9 to utilize the method provided in that regulation to obtain priorities assistance for export, shall continue to obtain priorities assistance for export, in the manner provided by Priorities Regulation No. 9 as amended from time to time.

(2) No operator, other than as specifically provided for in Schedule "C" hereof, may apply a preference rating to obtain delivery of any of the material specified in the schedule.

(3) Any allotment number or symbol issued or any preference rating assigned to any operator prior to May 15, 1943, shall not be considered revoked by the provisions of subparagraph (1) of this paragraph (C).

(D) Method of Securing MRO Material

(1) To secure delivery of material for maintenance or repair purposes or as operating supplies—including without limitation controlled materials, Class A, or Class B products—an operator is hereby authorized to use allotment symbol MRO-P-98-b and a preference rating of AA-1. Material delivered or to be delivered for manitenace or repair purposes or as operating supplies is referred to as "MRO Material."

(2) In placing an allotment symbol and preference rating on a delivery order for MRO material, the operator shall endorse upon such delivery order the certification provided in paragraph (L).

(3) Any operator requiring aluminum (in any of the forms or shapes constituting a controlled material) as essential MRO material, where the use of other material for this purpose is impracticable may obtain such aluminum from a controlled materials producer or from an approved aluminum warehouse in amounts of not to exceed 100 pounds from all sources during any one calendar quarter, only by endorsing upon any delivery order the certification provided in paragraph (L).

Any operator requiring aluminum as essential MRO material (in any of the forms or shapes constituting a controlled material) in amounts of excess of 100 pounds from all sources during any one calendar quarter, where the use of other material for this purpose is impracticable, may apply for an allotment of the amount thereof in excess of 100 pounds during any one calendar quarter by letter addressed to the Aluminum and Magnesium Division, War Production Board, Washington, D.C. Ref.: MRO. Such letters should contain substantially the information called for by subparagraphs (D) (1) to (D) (6) of supplementary order M-1-1, as amended March 10, 1943. Such operator may place authorized controlled material orders, based on any allotment received pursuant to such applications, with a controlled materials producer or an approved aluminum warehouse only by using the certification provided in paragraph (L).

(4) Prior to placing with a supplier a delivery order for MRO material bearing the certification provided in paragraph (L), each operator shall submit copies of delivery orders to the Petroleum Administration for War or the Office of Oil Controller as follows;

(1) Where as follows:

(i) Where Schedule "D" is applicable, submission shall be made in the manner and to the places specified therein. If Schedule "D" is not applicable:

(ii) Where the total cost to the operator of all items on the delivery order is $100.00 or more, but less than $1000.00, and the cost of every item on the delivery order is less than $500.00, one copy of such delivery order shall be submitted.

(iii) Where the total cost to the operator of all items on the delivery order is $1000.00 or more and the cost of every item on the delivery order is less than $500.00, two copies of such delivery order shall be submitted.

(iv) Where the cost to the operator of any item on the delivery order is $500.00 or more, two copies of such delivery order shall be submitted.

No delivery order need be submitted by an operator where the total cost to the operator of all items on the delivery order is less than $100.00.

When the delivery order is for MRO material to be used in production, a domestic operator shall submit such delivery order to the district office of the Petroleum Administration for War in the district where the material is to be used.

When the delivery order is for MRO material to be used in any other branch of the industry, a domestic operator shall submit such delivery order: (A) to a district office of the Petroleum Administration for War (in the district in which the material will be used or in which the purchasing office of the operator is located, as the operator may elect) where such order is to be submitted in accordance with subparagraphs (D) (4) (ii) or (D) (4) (iii); or (B) to the Washington office of the Petroleum Administration for War where such delivery order is to be submitted in accordance with subparagraph (D) (4) (iv).

A Canadaian operator shall, in every instance submit such delivery order to the Office of Oil Controller of the Dominion of Canada.

Each such delivery order submitted to the Petroleum Administration for War or the Office of Oil Controller shall identify the specific use to which the material is to be used and put, the branch of the petroleum industry and the PAW district in which the material is to be used, the price, quantity and description of the amterial on the delivery order (including weight of a controlled material), and, where applicable, such additional information as may be necessary to enable the proper official to make an accurate determination of the operator's needs.

(5) No operator may place with a supplier any (D) (4) (iii) or (D) (4) (iv) until approval has been received from the Petroleum Administration for War or the Office of Oil Controller.

(6) In placing a delivery order bearing an allotment symbol or preference rating, no operator shall alter the customary designation of any item or subdivide an ordinary purchase of any item or items for the purpose of making it appear that an item costs less than $500.00; that the total cost of all items on the delivery order is less than $1000.00; or that the total cost of all items on the delivery order is less than $100.00.

(E) Emergency Provisions for Securing MRO Material

(1) If there has been an actual breakdown or suspension of operations and if the method specified in paragraph (D) for using the allotment symbol, preference rating or certification will not permit an operator to obtain MRO material on the date and in the quantity required, the operator may request authority to obtain delivery of such material by communicating by letter, telegram or telephone with the Petroleum Administration for War, Washington, D.C., Ref.: P-98-b, supplying the following information:

(i) Date of actual breakdown or suspension of operations and exact explanation as to what extent in paragraph (D) for using the allotment symbol, preference rating or certification will not permit an operator to obtain MRO material on the date and in the quantity required;

(ii) Description of equipment to be repaired and its function in maintaining continuous operation;

(iii) Price, quantity, and detailed description of necessary material (including weight if a controlled material) and number and date of delivery order(s) therefor.

Whenever any of the above information is furnished by telephone the operator shall confirm such information within three days by a letter or telegram.

MATERIAL FOR PRODUCTION OPERATORS

No delivery order for MRO material for emergencies need be submitted.

(2) No operator may place with a supplier a delivery order, covering the delivery of material for which approval has been requested pursuant to subparagraph (E) (1), until approval has been received from the Petroleum Administration for War or the War Production Board.

In placing any such delivery order after receipt of approval, the operator shall use the certification provided in paragraph (L).

(F) Method of Securing Material for Production Operations.

(1 Any domestic operator, who during the year 1942 drilled 40,000 feet of hole or more, may apply for authority to obtain delivery of any material (other than MRO material)

requiring the use of an allotment number of preference rating, which material is for a production operation, only by submitting to the district office of the Petroleum Administration for War in the district where the material is to be used Form PD-873 at least four months prior to the calendar-quarter in which such material is to be delivered. Notwithstanding this provision, any such operator may request interim assistance to obtain additional quantities of material for a production operation, or any domestic operator who during the year 1942 drilled less than 40,000 feet of hole, may apply for authority to obtain delivery of any material (other than MRO material) requiring the use of an allotment number of preference rating for a production operation, only by submitting to the district office of the Petroleum Administration for War in the district where the material is to be used Form PD-873 not less than one month prior to the time the operator proposes to initiate or to obtain delivery of material for such production operation.

Any Canadian operator may apply for authority to obtain delivery of any material (other than MRO material) requiring the use of an allotment number or preference rating, which material is for a production operation, only by submitting to the Office of Oil Controller of the Dominion of Canada Form PD-873 not less than one month prior to the time the operator proposes to initiate or to obtain delivery of material for such production operation.

(3) Submission of Form PD-873 to the Petroleum Administration for War or the Office of Oil Controller shall constitute an application for an allotment of controlled materials, an application for an allotment number and preference rating, and, subject to the applicable provisions of Petroleum Administrative Order No. 11, as amended and supplemented from time to time, an application for authority to use an allotment number and preference rating to secure delivery of material necessary for the production operation(s) specified on such form. The Petroleum Administration for War or the Office of Oil Controller may thereafter make an allotment and authorize the use of an allotment number and preference rating to secure delivery of material necessary for the production operation(s) specified on such form. Such allotment and authorization will be made on Form PD-873.

(4) In the event that authority to use an allotment number and preference rating is granted to the operator, the operator may use such allotment number and preference rating by placing them upon the delivery order for material to be used in the production operation(s) specified on Form PD-873 and by certifying the delivery order as provided in paragraph (L).

(5) Prior to placing with a supplier a delivery order bearing an allotment number and preference rating for the delivery of any material (other than MRO Material or controlled materials) to be used in a production operation, each operator shall submit copies of delivery orders to the Petroleum Administration for War or the Office of Oil Controller, as follows:

(i) Where the total cost to the operator of all items on the delivery order is $100.00 or more, but less than $1000.00, and the cost of every item on the delivery order is less than $500.00, one copy of such delivery order shall be submitted.

(ii) Where the total cost to the operator of all items on the delivery order is $1000.00 or more or where the cost to the operator of any item on the delivery order is $500.00 or more, two copies of such delivery order shall be submitted.

No delivery order need be submitted by an operator where the total cost to the operator of all items on the delivery order is less than $100.00.

A domestic operator shall submit such delivery order to the district office of the Petroleum Administration for War in the district where the material is to be used. A Canadian operator shall submit such delivery order to the Office of Oil Controller of the Dominion of Canada.

Each such delivery order submitted to the Petroleum Administration for War or the Office of Oil Controller shall have endorsed upon it or be accompanied by a statement identifying the serial number of the Form PD-873 which was returned to him as authority to acquire the material, the specific use to which the material is to be put, and the price, quantity and description of material on the delivery order.

(6) No operator may place with a supplier any delivery order submitted in accordance with subparargaph (F) (5) (ii) until approval has been received from the Petroleum Administration for War or the Office of Oil Controller.

(7) In placing a delivery order bearing an allotment number and preference rating for material (other than controlled material) to be used in a production operation, no operator shall alter the customary designation of any item or subdivide an ordinary purchase of any item or items for the purpose of making it appear that an item costs less than $500.00; that the total cost of all items on the delivery order is less than $1000.00; or that the total cost of all items on the delivery order is less than $100.00.

MATERIAL FOR CONSTRUCTION OPERATIONS

(G) Authorization Required for Certain Construction Operations

No operator may accept delivery of, acquire or use material in a construction operation except as specified in Schedule "E" hereof.

(H) Method of Securing Material for Construction Operations

(1) Any domestic operator may apply for authority to obtain delivery of material (other than MRO material) requiring the use of an allotment number of preference rating, which material is for a construction operation, only by submitting to the Petroleum Administration for War those forms at such time as may be specified in Schedule "E" hereof. Any Canadian operator may apply for authority to obtain delivery of material (other than MRO material) requiring the use of an allotment number or preference rating, which material is for a construction operation, only by submitting to the Office of Oil Controller of the Dominion of Canada those forms at such times as may be specified in Schedule "E" hereof.

(2) Submission of the proper form for a specific construction operation as specified in Schedule "E" hereof shall constitute an application for an allotment of controlled materials, an application for an allotment number and preference rating, an application for authority to use an allotment number and preference rating, and, subject to the applicable provisions of Schedule "E" hereof, an application for authorization to accept delivery of or acquire material and to initiate the construction operation(s) specified in the form submitted. The Petroleum Administration for War, the Office of Oil Controller, or the War Production Board may thereafter make an allotment and authorize the use of an allotment number and preference rating to secure delivery of material necessary for the construction operation(s) specified in or authorized pursuant to an application submitted in accordance with Schedule "E" hereof.

(3) In the event that authority to use an allotment number and preference rating is granted to the operator, the operator may use such allotment number and preference rating by placing them upon the delivery order for material to be used in the specified construction operation(s) and by certifying the delivery order as provided in paragraph (L).

(4) Preference ratings assigned to construction operation(s) may be applied or extended only for the purpose of acquiring those items of material specifically approved in connection with the construction operation(s) specified in or authorized pursuant to an application submitted in accordance with Schedule "E" hereof; and authorized controlled material orders may be placed only for the purpose of acquiring those items of controlled material specified for use in the construction operation(s).

(5) Any application upon the required form specified in Schedule "E" hereof for a construction operation located in the United States, its territories or possessions shall be submitted to the Petroleum Administration for War, Washington, D.C., or to such other place as may be specifically designated in Schedule "E" hereof. Any such application for a construction operation located in the Dominion of Canada shall be submitted to the Office of Oil Controller of the Dominion of Canada.

ALLOTMENTS, PLACEMENT OF ORDERS, GENERAL

(I) Allotments in Production or Construction Operations

In certain instances an operator, who has obtained the necessary allotment of controlled materials for a production or construction operation, may require the manufacture and installation of certain Class A products or may undertake the construction operation through a construction contractor. In either case it may be necessary for the operator to allot a portion of his allotment to the Class A product manufacturer or to the contractor (each of whom then becomes a secondary consumer) for reallotment or the placement of controlled material orders. Any operator making such an allotment shall follow the procedures established therefor in CMP Regulation No. 1, except as otherwise modified by this order. A secondary consumer who receives any such allotment shall not be bound by the provisions of this order and must rely upon existing procedures other than those established by this order in securing necessary material.

(J) Placement of Delivery Orders—Application of Preference Ratings

(1) An operator who has complied with the provisions of paragraph (D), (E), (F) or (H) of this order may place a delivery order with any supplier for delivery of material authorized pursuant to such paragraph and may place upon such delivery order the allotment number or symbol and preference rating which have been duly authorized in accordance with the provision of this order.

(2) Any delivery order rated under this order shall be identified by placing thereon the allotment number or symbol authorized pursuant to the provisions of this order. Any delivery order rated pursuant to this order and bearing the certification provided for in this order shall have the same status as an order bearing an allotment number or symbol and preference rating under CMP Regulation No. 3. The allotment symbol MRO-P-98-b shall constitute an allotment symbol for the purpose of CMP Regulation No. 3.

(3) Any delivery order for controlled materials placed pursuant to this order and bearing the certification provided for in this order shall constitute an authorized controlled material order: provided, that such delivery order must be in sufficient detail to permit entry on mill schedules and must be received by the controlled materials producer at such time in advance as is specified in Schedule III of CMP Regulation No. 1, or at such later time as the controlled materials prdoucer may find it practical to accept the same.

(4) The allotment number referred to in this paragraph (J) or endorsed upon any delivery order bearing the certification provided for in this order shall be the abbreviated allotment number prescribed by subparagraph (C) (6) (ii) of CMP Regulation No. 1, including as the last two digits, the number of the month in which delivery is requested in place of the number identifying the quarter for which the allotment received is valid.

(K) Use, Cancellation or Reduction of Allotments

(1) When an allotment received by an operator is not reallotted, or authorized controlled material orders therefor are not placed, within 30 days of receiving the allotment, the operator shall promptly notify the Petroleum Administration for War in Washington, D.C., or the Office of Oil Controller in Toronto, Canada, of this fact and of the extent to which the allotment has not been reallotted or authorized controlled material orders therefor have not been placed. In the event that an operator elects not to use an allotment which has been received by him, he shall, within 30 days of receiving the allotment, notify the Petroleum Administration for War in Washington, D.C., or the Office of Oil Controller in Toronto, Canada, of this fact and of the extent to which he has elected not to use the allotment, together with the reasons therefor.

(2) An operator who has made an allotment may cancel or reduce the same by notice in writing to the person to whom it was made. Where an allotment received by an operator is cancelled, he must cancel all allotments which he has made and all authorized controlled material orders which he has paced, on the basis of the allotment; and where an allotment received by an operator is reduced he must cancel or reduce allotments which he has made, or authorized controlled material orders which he has placed, to the extent that the same exceed his allotment as reduced. In the event that this course of action is impracticable, the operator shall immediately report to the Petroleum Administration for War or the Office of Oil Controller for instructions.

(L) Certification

An operator may use any allotment number or symbol or preference rating authorized pursuant to this order only by endorsing upon his delivery order a certification in substantially the following form, signed manually or as provided in Priorities Regulation No. 7:

"The undersigned purchaser certifies, subject to the penalties of Section 35A of the United States Criminal Code, to the seller and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the items ordered for the purpose for which ordered, and to use any preference rating or allotment number or symbol which the undersigned has placed on this order."

This certification may be used in lieu of any other certification required by any CMP regulation to be endorsed on a delivery order or to be furnished therewith, any certification provided for in this order, so used, shall be construed to be a representation of facts in the same manner and to the same extent as any specific certification required by any CMP regulation.

(M) Restoration of Inventories

An operator may, subject to the provisions of this order, use the allotment number or symbol and the preference rating duly authorized in accordance with the provisions of this order to restore to a practical working minimum his inventory of material where the inventory has been depleted through use of MRO material or material necessary to production or construction operation: provided, that no delivery of material which would result in surplus material, as defined in Preference Rating Order P-98-c, may be accepted by any operator.

(N) Restrictions

No operator may use the allotment number or symbol or the preference rating duly authorized in accordance with the provisions of this order:

(1) To obtain delivery of material in greater amounts or on earlier dates than required to fulfill the purpose authorized pursuant to the provisions of this order.

(2) To obtain delivery of material for any purpose other than a purpose authorized pursuant to the provisions of this order.

(3) To obtain delivery of material which

can be secured without the use of an allotment number or symbol or preference rating.

(4) To obtain delivery of material the use of which could be eliminated without serious loss of efficiency by substitution of less scarce material, or by change of design.

(5) To obtain delivery of material in such amounts or at such dates that receipt of such amounts on the requested dates would result in surplus material, as defined in Preference Rating Order P-98-c.

(6) To obtain delivery of material unless such operator is on or after June 1, 1943, a participant in the PAW Materials Redistribution Program No. 2, in the event that participation by the operator in such program is required by the terms of the program.

(O) Applicability of Other Orders and Regulations

(1) This order and all transactions affected hereby, except as herein otherwise provided, are subject to all applicable orders or regulations of the War Production Board, as amended from time to time.

(2) None of the provisions of CMP Regulations Nos. 2, 5, or 6 (or the limitations incorporated in any CMP regulation which otherwise would subject an operator to the provisions of CMP Regulations Nos. 2, 5, or 6) shall apply to an operator and no operator shall obtain any material under or be limited by the provisions of such regulations or limitations. The provisions of paragraphs (i), (s) (s-1) and (u) of CMP Regulation No. 1 shall not apply to an operator who secures delivery of material in accordance with the provisions of this order and no such operator shall to this extent be limted by the provisions of Limitation Order L-41, as amended from time to time, shall apply to an operator as such operator is limited by the provisions of such order.

(P) Communications

All reports which may be required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed:

(1) By any person located in the United States, its territories or possessions to: Petroleum Administration for War, Interior Building, Washington, D.C., Ref.: P-98-b.

(2) By any person located in the Dominion of Canada to: Office of Oil Controller, Dominion of Canada, Toronto, Canada, Ref.: P-98-b.

Wherever cmmunications are specifically directed to be addressed to a district office of the Petroleum Administration for War such communications shall be addressed to the district office for the appropriate area as specified in Schedule "F" hereof.

(Q) Violations

Any person who wilfully violates any provision of this order or who wilfully furnishes false information to the Petroleum Administration for War or the War Production Board in connection with this order is guilty of a crime and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of or from processing or using material under priority control and may be deprived of priorities assistance by the War Production Board.

Issued this 15th day of May 1943.

WAR PRODUCTION BOARD
By (Sgd) J. JOSEPH WHELAN
Recording Secretary

SCHEDULE "A"

"Maintenance or Repair" means, without regard to accounting practice, any use of material:

(1) In production, natural gasoline production, transportation or refining for any of the following purposes:

(i) The upkeep of material or equipment in a sound working condition;

(ii) The restoration of material or equipment which has been rendered unsafe or unfit for servcie by wear and tear, damage, destruction or failure of parts or similar causes; or

(iii) Any other production or construction operation not exceeding in material cost $500 for any one complete operation which has not been subdivided for the purpose of coming within this definition:

Provided, that upkeep or restoration shall not include any use of material for the improvement of material or equipment by the replacement of material which is still serviceable in the existing material or equipment; and provided further, that maintenance or repair shall not include the installation or replacement of pumping or other artificial lifting equipment or the deepening or plugging back of any well.

(2) If marketing for any of the following purposes:

(i) The upkeep of any structure or equipment in a sound working condition;

(ii) The restoration of any structure or equipment or part thereof to a sound working condition when such structure or equipment or part thereof to a sound working condition when such structure or equipment or part thereof has been rendered unsafe or unfit for further service by wear or tear, damage, destruction, failure of parts or similar causes; or

(iii) Any other construction operation in connection with any bulk plant (but not any service station or retail outlet) not exceeding in material cost $500 for any one complete operation which has not been subdivided for the purpose of coming within this definition:

Provided, that upkeep or restoration shall not include any use of material for the improvement of any structure or equipment by the replacement of material which is still serviceable while in the existing structure or equipment: and provided further, that maintenance or repair shall not include any construction operation in connection with a service station or retail outlet other than for upkeep or restoration purposes.

SCHEDULES "B"

NON-PETROLEUM INDUSTRY USES OF MATERIAL

Other than as specifically provided for in this schedule, use of the following material shall not be considered as a use of material in the petroleum industry:

(a) Material or equipment which is to be used by consumer accounts for or in the storage or dispensing of petroleum, including liquefied petroleum gas.

(b) Material or equipment which is to be used for transportation by means of a tank truck or trailer, railroad rolling stock, or marine equipment: **Provided,** that:

(i) Where material is to be used on a tank truck or trailer and is specialized petroleum material or equipment which is actually to be attached to the truck or trailer and is necessary to the containing, dispensing, measuring the movement, or distributing of petroleum, such use shall be considered a use of material in the petroleum industry.

(ii) Where material is to be used on railroad rolling stock and the rolling stock is owned or leased by the operator, used on his premises and in the petroleum industry, and is not under the jurisdiction of the Interstate Commerce Commission, such use shall be considered a use of material in the petroleum industry.

(iii) Where material is to be used on marine equipment and the marine equipment is used or chartered by the operator, is used on or in the vicinity of his premises and in the petroleum industry and is not under the jurisdiction of the United States Maritime Commission, the Navy Department, or any other federal agency for the purpose of establishing methods by which material incident to the operation of the marine equipment may be made available, such use shall be consdiered a use of material in the petroleum industry.

(c) Material or equipment which is to be used in connection with a construction operation for "residential construction" or "multiple residential construction," as defined in Limitation Order L-41, as amended from time to time.

SCHEDULE "C"

MATERIAL AND EQUIPMENT USED IN THE PETROLEUM INDUSTRY EXCLUDED FROM PROVISIONS OF THIS ORDER

No operator, other than as specifically provided for in this schedule, may apply a preference rating to obtain delivery of any of the following material:

(a) Automotive replacement parts (as defined in Limitation Order L-158) and automotive maintenance equipment.

(b) Chemicals of the following types manufactured or produced for exclusive use in the petroleum industry:

(i) Anti-oxidants (gum inhibitors) for motor fuels.

(ii) Chemical additives and compound bases for heavy duty gasoline engine, diesel engine and aviation engine oils.

(iii) Chemical additives and compound bases for hypoid gear oils.

(iv) Synthetic catalysts for oil cracking operations.

(v) Synthetic catalysts for cumene and codimer manufacture.

(vi) Synthetic catalysts for petroleum isomerization operations.

(vii) Synthetic catalysts for petroleum sweetening operations.

(c) Clothing, shoes, or other wearing apparel, if made of leather or textiles; **provided,** that such a preference rating may be applied to obtain delivery of the following items which shall be considered as MRO material obtainable under the provisions of this order where specifically designed and used to furnish protection against specific occupational hazards (other than weather):

(i) Asbestos clothing.

(ii) Gauntlet type welders, leather gloves and mittens, and electricians, leather protector or cover gloves.

(iii) Metal mesh gloves, aprons, and sleeves.

(iv) Other safety leather gloves or mittens but only if steel stitched or steel reinforced.

(v) Plastic and fibre safety helmets.

(vi) Safety clothing impregnated or coated for the purpose of making the same resistance against fire, acids, other chemicals, or abrasives.

(vii) Safety industrial leather clothing other than gloves or mittens.

(viii) Safety industrial rubber gloves and hoods and linemen's rubber gloves and sleeves.

(d) Fabricated containers (in knock-down or set-up forms, whether assembled or unassembled) required for packaging product to be shipped or delivered: **provided,** that such a preference rating may be applied to obtain delivery of the following items which shall be considered as MRO material obtainable under the provisions of this order:

(i) Sample containers used by an operator for the purpose of moving samples to laboratories.

(ii) Lead seals, box strapping, dunnage (other than paper) and other materials used for any of these same packaging purposes.

(iii) Material to be incorporated in or made a part of existing fabricated containers which material is necessary to the further continued use of such containers.

(e) Fuel or electric power.

(f) Office machinery or office equipment: **provided,** that such a preference rating may be applied to obtain delivery of parts therefor which shall be considered as MRO material obtainable under the provisions of this order where necessary to the continued effective use of existing office machinery or office equipment.

(g) Paper, paperboard, and products manufactured therefrom moulded pulp products: **provided,** that such a preference rating may be applied to obtain delivery of the following items which shall be considered as operating supplies obtainable under the provisions of this order:

(i) Photographic and sensitized paper.

(ii) Tracing paper.

(h) Portable and hand service equipment listed below where it is to be used in service station operations:

(i) Drills, reamers, taps and hack-saw blades manufactured of high speed steel as defined in Supplementary Order M-21-h of the War Production Board.

(ii) Hand service operating tools.

(iii) Portable electric tools.

(iv) Precision measuring hand tools.

(i) Printed matter and stationery.

(j) Restricted products as defined in Preference Rating Exclusion Order M-201.

(k) Soft wood lumber as defined in Conservation Order M-208, to the extent that the ratings are made available by that order.

SCHEDULE "D"

Because of the over-all materials situation it has been necessary in exceptional instances to develop specialized treatment for certain types of material. In certain instances, special treatment is necessary only for the purpose of developing requirements to assure sufficient supplies to operators. Material of this character is treated in Part 1 of this schedule.

In other instances, the critical shortage of particular materials and the universal importance of such materials to the war program have required more complete control than ordinarily required by this order. Material of this character is treated in Part 2 of this schedule.

The schedule has been so arranged as to provide a flexible medium whereby as the status of important classes of material alters, particular classes can be added to or subtracted from the lists—thus adjusting the material demand and supply picture to the needs of petroleum industry operators.

PART 1—Material Requiring Submission of Delivery Order for Information Only

(a) Prior to placing with a supplier a delivery order (for the MRO material specified in (b) of Part 1 of this schedule) bearing the certification provided in paragraph (l) each operator shall submit for information purposes only (to the district office of the Petroleum Administration for War in the district where the material is to be used or the Office of Oil Controller) one copy of any delivery order for such material unless the total cost to the operator of all items on the delivery order is less than $100.00.

No delivery order need be submitted by an operator where the total cost to the operator of all items on the delivery order is less than $100.00.

(b) specified MRO material:

(i) Aluminum allocated pursuant to application made to the Aluminum and Magnesium Division of the War Production Board.

(ii) Rotary bits.

(c) In placing delivery order bearing an allotment symbol or preference rating, no operator shall alter the customary designation of any item specified in Part 1, (b) of this schedule or subdivide an ordinary purchase of any item or items specified in Part 1 (b) of this schedule for the purpose of making it appear that the total cost of all items on the delivery order is less than $100.00.

PART 2—Materials Requiring Pre-Submission of Delivery Order

(a) Prior to placing with a supplier a delivery order (for the MRO material specified in (b) of Part 2 of this schedule) bearing the certification provided in paragraph (L) each operator shall submit for approval two copies of any delivery order for such material where the total cost to the operator of

all items on the delivery order is $100.00 or more.

No delivery order need be submitted by an operator where the total cost to the operator of all items on the delivery order is less than $100.00.

When the delivery order is for the MRO material specified in Part 2, (b) to be used in production, a domestic operator shall submit such delivery order to the district office of the Petroleum Administration for War in the district where the material is to be used. When the delivery order is for such MRO material to be used in any other branch of the industry, domestic operator shall submit such delivery to order: (A) to a district office of the Petroleum Administration for War (in the district in which the material will be used or in which the purchasing office of the operator is located, as the operator may elect) where the total cost of all items on the delivery order is $100.00 or more and the cost of every item on the delivery order is less than $500.00; or (B) to the Washington office of the Petroleum Administration for War where the cost of any item on the delivery order is $500.00 or more. A Canadian operator shall, in every instance submit such delivery order to the Office of Oil Controller of the Dominion of Canada.

Each delivery order submitted to the Petroleum Administration for War or the Office of Oil Controller shall have endorsed upon it or be accompanied by a statement identifying the specific use to which the material is to be put, the branch of the petroleum industry and the PAW district in which the material is to be used, the price, quantity and description of the material on the delivery order (including weight if a controlled material) and where applicable, such additional information as may be necessary to enable the proper official to make an accurate determination of the operator's needs.

(b) Specified MRO material:

(i) Cast-iron valves over 12 inches.

(ii) Industrial control instruments including relief and control valves and regulators.

(iii) Steel valves.

(c) No operator may place with a supplier a delivery order covering the delivery of material for which approval has been requested pursuant to (a) of Part 2 of this schedule, until approval has been received from the Petroleum Administration for War.

(d) In placing a delivery order bearing an allotment symbol or preference rating, no operator shall alter the customary designation of any item specified in Part 2, (b) of this schedule or subdivide an ordinary purchase of any item or items specified in Part 2, (b) of this schedule for the purpose of making it appear that an item costs less than $500.00 or that the total cost of all items on the delivery order is less than $100.00

SCHEDULE "E"

This schedule both describes and determines how to obtain the delivery of material for and authority to use material in construction operations. Schedule "E" shall not determine the methods by which an operator obtains delivery of, acquires or uses MRO material or material for production operations. Requirements governing the use of priorities assistance to secure delivery of and use MRO material are treated in Subsection ii and Schedules "A," "C" and "D." Requirements governing the use of priorities assistance to secure delivery of material for production operations are treated in Subsection iii: the use of material in production operations is covered in PAO No. 11.

The requirements in this schedule with respect to applications for authorization to accept delivery of or acquire material and to initiate a construction operation (but not with respect to obtaining priorities assistance) do not apply to any Canadian operator.

For the purpose of this Schedule "E," "Material on hand' means any material:

(1) Which has been or can be obtained

Table for Schedule "E"

(1) Petroleum Industry Operations	(2) Construction Operations Covered by This Schedule	(3) Extent of Authorization Required and Method of Obtaining Authorization	(4) Use Form Below to Obtain Authority to Engage in a Construction Operation, if Required	(5) Use Form Below to Obtain Priorities Assistance	(6) Order Which Governs the Need to Obtain Authority
Marketing	Any construction operation, as defined in P-98-b to the extent covered by PAO No. 12 or M-68-c.	(1) Authority is granted by PAO No. 12 to undertake certain construction operations and installation of equipment. As to such operation or installation, no action need be taken. (2) Authority must be obtained before undertaking any construction operation or installation of equipment other than those specifically permitted by PAO No. 12. To request authority, file Form PD-215 (revised) with the district director of marketing at the PAW district office for the district in which material will be used.	PAW Form 23 or Form PD-215 (revised) PAW	Form PD-200	PAO No. 12 or M-68-c.
Natural gasoline Production	Any construction operation as defined in P-98-b (any production operation as defined in PAO No. 11 directly incident to the extraction or recovery of natural gasoline and associated hydrocarbons).	Authority must be obtained under PAO No. 11 before engaging in any such construction operation. To request authority, file PAW Form 4 as follows: 3 copies with the Director of Natural Gas and Natural Gasoline, Petroleum Administration for War, Washington, D.C. 1 copy with the District Director of Natural Gas and Natural Gasoline, Petroleum Administration for War, district office.	Form 4.	Form PD-200	PAO No. 11.
Refining or Transportation	(a) Any constructions operation, as defined in P-98-b, with an estimated material cost of less than $3000 for any one complete operation, which can be completed primarily with material on hand. (b) Any construction operation, as defined in P-98-b with an estimated material cost of $3,000 or more for any one complete operation, which can be completed primarily with material on hand. (c) Any construction operation, as defined in P-98-b the delivery of material for which will require priorities assistance.	Any operator, to the extent that he is engaged in refining or transporation, may undertake any construction operation as described and limited in column (2) without obtaining any authority to do so. No operator, to the extent that he is engaged in refining or transportation, may undertake any construction operation described in column (2) unless he obtains prior authority to do so from the Petroleum Administration for War. To request such authority file Form PD-200 with the Petroleum Administration for War, Washington, D.C. No operator, to the extent that he is engaged in refining or transportation, may undertake any construction operation described and limited in Column (2) unless he obtains prior authority to do so from the Petroleum Administration for War. To request such authority, file Form PD-200 with Petroleum Administration for War, Washington, D.C.		Form PD-200	P-98-b Schedule "E."

FOOT NOTES—READ CAREFULLY.

(1) Use of Form PD-200b—After an operator has filed a form PD-200 and has been authorized to construct or has been granted priorities assistance, Form PD-200b should be used (1) to obtain priorities assistance for additional material; (2) to obtain greater quantities of material than authorized by the priorities assistance granted, or (3) to obtain a higher preference rating than the rating granted, if such is necessary to secure delivery of material at the time required.

(2) Form PD-200 used for both authority and priorities assistance—Where both authority to initiate a construction operation and priorities assistance are required and Form PD-200 is prescribed for both purposes, it is only necessary to file such Form PD-200 once for both purposes.

(3) Where to file Forms PD-200 and PD-200b—Domestic operators should file with the Washington office of the Petroleum Administration for War. Canadian operators should file with the Office of Oil Controller.

(4) When to file forms—Form PD-215 (revised), PAW Form 23, PAW Form 4, and Form PD-200 (when it is used to obtain authority to initiate a construction operation) must be filed before construction or installation is begun. Where Form PD-200 is used to obtain priorities assistance only, it should be filed at the earliest possible opportunity and preferably with Form PD-215 (revised), PAW Form 23, or PAW Form 4, if authority to initiate a construction operation in marketing or natural gasoline production is to be requested.

(5) Filing of Form CMP-4c—Not required of operators except where specifically requested by the Petroleum Administration for War or the office of oil controller.

SCHEDULE "F"

INSTRUCTIONS FOR DIRECTING COMMUNICATIONS TO DISTRICT OFFICES

District	Area Comprised	How Directed	Address
No. 1	Main, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, District of Columbia.	Petroleum Administration for War, Ref.: P-98-b	1104 Channin Bldg., 122 East 42nd St., New York, N. Y.
No. 2	Ohio, Kentucky, Tennssee, Indiana, Michigan, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota.	Petroleum Administration for War, Ref.: P-98-b	1200 Blum Bldg., 624 S. Michigan Ave. Chicago, Illinois, or 410 Beacon Bldg., Tulsa, Okla.
No. 3	Alabama, Mississippi, Louisiana, Arkansas, Texas, New Mexico.	Petroleum Administration for War, Ref.: P-98-b	245 Mellie Esperson Bldg., Houston, Texas
No. 4	Montana, Wyoming, Colorado, Utah, Idaho	Petroleum Administration for War, Ref.: P-98-b	320 First Natl. Bank Bldg., Denver, Colo.
No. 5	Arizona, California, Nevada, Oregon, Washington, Territories of Alaska or Hawaii.	Petroleum Administration for War, Ref.: P-98-b	855 Subway Terminal Bldg., Los Angeles, Calif.

Pipe Wiper services 153 trips of pipe on well deeper than 5000-ft.

Talk about durability, this Patterson-Ballagh Pipe Wiper is a good example! It was installed on a well at Medill, Oklahoma, for 3½" pipe. The well is below 5000 feet and this Wiper made 153 trips. The Wiper was then cut out to 4½" and was working on its second well when this photo was taken. It's still in good condition and going strong. Such service can be duplicated on *your* wells.

Patterson-Ballagh Corporation — Los Angeles, Houston, New York

PATTERSON-BALLAGH

RUBBER PIPE WIPERS

without priorities assistance (other than priorities assistance assigned by Subparagraph (B) (1) of M-208); or

(2) Which has been acquired with priorities assistance (other than priorities assistance made available by this order to secure delivery of MRO material) for a purpose other than use in the construction operation for which application must be made on the appropriate form specified in column (4).

(3) Which will not be replaced in the operator's inventory by the use of priorities assistance made available by this order to secure delivery of MRO material.

For further definitions of the terms used in the table (page 41) consult the respective orders specified, the terms of any other applicable "E," "L," "M," or "U" order shall apply.

U. S. Navy Consumption of Oil Rises Sharply

Operations of the United States Navy during the fiscal year to begin next July 1 will require approximately 76,933,400 barrels of fuel oil, 12,479,000 barrels of diesel oil, 8,580,000 gallons of motor gasoline for small craft and 9,780,000 gallons of aviation gasoline, it was disclosed May 14 by the House Appropriations Committee in reporting the naval supply bill for the year.

Peacetime consumption of the Navy is about 22,000,000 barrels of fuel oil and 835,000 barrels of gasoline, while for the current year it is estimated consumption will include 71,046,000 barrels of fuel oil, 9,000,000 barrels of diesel oil, 7,780,000 gallons of motor gasoline and 9,547,000 gallons of aviation gasoline.

The department estimates it will pay $1.646 per barrel, or a total of $89,596,640 for fuel oil; $1.632 per barrel, or $20,365,228 for diesel oil; 6.94 cents per gallon, or $595,452 for motor gasoline, and 13.77 cents per gallon or $1,346,706 for aviation gasoline.

The total appropriation for fuel and transportation was cut $7,315,000 by the committee on the basis of a report from the Navy Department that oil stocks held by British companies have been made available for the fueling of United States vessels.

Included in the bill was an appropriation of $50,000 for operation of the Naval petroleum reserves, a reduction of $15,000 from the recommendation of the budget bureau and $21,755 under the fund for the current fiscal year.

During the hearings, an appropriations subcommittee questioned Rear Admiral Harry A. Stuart at length on the contract between the Navy and Standard Oil Company of California for conservation of Naval Reserve No. 1, which he disclosed has been submitted to the President for such direction as he may deem proper, as a result of the refusal of the House earlier this year to appropriate some $1,750,000 which the department proposed to pay the company in cash.

Cayuga-Long Lake Gas Control Order Entered

Control of gas waste in the Cayuga and Long Lake fields, is provided for in a new Texas Railroad Commission order. PAW had complained of the vast quantities of gas wasted in these fields and urged the commission to act.

The new order provided that in the Cayuga field, a ratio of 5000/1 is allowed if as much as 3000 feet per barrel is returned to the sand. In other words, not more than 2000 feet of gas may be blown into the air.

A similar allowance for Long Lake would permit ratios as high as 10,000/1 as long as no more than 5000 feet is vented to the atmosphere. The remainder of the gas must be diverted to legal purposes.

Program Seeks to Safeguard Industry Against Loss of Essential Personnel

A comprehensive program which it is hoped will safeguard the oil industry against losses of key personnel and assure that deferments of future selectees will extend over a sufficient time to allow for the adequate training of replacements has been worked out by PAW's manpower and labor councilor, Dr. Frederick Harbison.

Involving the filing of replacement schedules with the Selective Service, the responsibilities for carrying out the program have been placed on PAW district officials who, in turn, will cooperate with the several individual industry committees in carrying it out.

The program will apply to all branches of the industry except marketing, for which a specific plan is now being worked out.

Details of the program were outlined by Dr. Harbison in a report to the May meeting of the PIWC committee on production.

The replacement schedule is a part of the Manning Table Plan worked out by the War Manpower Commission. Companies desiring to participate in that plan must obtain permission from WMC, since it is limited to plants or activities engaged 75 percent or more in war work, by volume of products, and certain other industries; however, Dr. Harbison said, almost without exception petroleum plants have been granted permission to participate.

Three schedules are involved in the Manning Table Plan: Schedule A, which is a listing of every job in a plant, keyed to the Dictionary of Occupational Titles and described in detail; Schedule B, explicating the data from Schedule A to divulge the total percentage of employes in each job, their origin (whether supplied from within the plant by upgrading or transfer), whether handicapped persons are employable, and the estimated future additions in each category, and Schedule C, which is a breakdown by job of all male employes shown on Schedule A into age-dependency groups from 18 to over 45.

The replacement schedule, Dr. Harbison explained, takes the place of Schedule C, and provides detailed information, by name, of all male employes between 18 and 38 who are single or married and without children. The schedule, he said, accomplishes a reciprocal agreement with Selective Service allowing the orderly release of selectees and insuring deferment for stated periods for key personnel, covering also the irreplaceability of certain key people without whom the industry could not meet its production quotas.

Selective Service has agreed to accept the replacement schedules from the oil industry in advance of, or in the absence of, Manning Tables. This, Dr. Harbison emphasized, does not mean that Manning Tables need not be filed, but affords protection to the industry's key workers and the assurance of proper deferments to selective service eligibles during the time trainees are being prepared to replace them.

The filing of replacement schedules requires that as soon as the state Selective Service director, with whom they are filed, has accepted them and the state certification number has been received, a 42-A form shall be filed for every man of military eligibility shown on the replacement list of the schedule. This form will bear the state certification number and will show the date the individual will be replaced. Simultaneously with the filing of these forms, a request should be addressed to the local United States Employment Service office for a replacement of the individual to be released, stating in detail the physical and mental requirements for the job, but should not request a replacement trained to the same level as the man he is to replace.

Three important facts have been the basis of the PAW program for filing replacement schedules, the council committee was told:

1. Adequate job descriptions and training-period requirements are essential to the protection of the industry.

2. The adoption on a nationwide basis by the individual oil companies of the standards set by the preceding paragraph (1) is required in order to insure that WMC has uniform standards for any action that may later be necessary involving the manpower of the petroleum industry.

3. Manning Tables for the larger companies and summary Manning Tables covering groups of smaller companies must be filed in order that WMC may have the best picture of nationwide petroleum industry requirements.

Dr. Harbison urged that each integrated company file replacement schedules for all their operations and departments simultaneously. Small operators dealing in only one branch of the industry should file on their own complete operations, but will be covered in a blanket Manning Table to be prepared for submission to WMC.

The full program to achieve plant protection and controlled release of registrants, by districts and nationally, was outlined by Dr. Harbison as follows:

(1) Under the respective district industry committees, the establishment of subcommittees on manpower by directive of the District Director, who, through his Division Director, is responsibile for carrying out the program.

(2) Request by subcommittee for lists of job titles and descriptions and estimated training requirements from every petroleum industry branch in the district, with time limitation statement (optional).

(3) Collation of individual company titles and description and training periods into a district master list, showing preferred titles and others where necessary, description in detail of duties, special physical and mental requirements, supervision, most essential skill, percent of time devoted to the several steps in each job, and other specialized requirements.

(4) Presentation to Industry Committee and PAW Director of (3) above for acceptance.

(5) Conference under the direction of the PAW Central Office (held in the PAW district) with representatives of the War Manpower Commission and the Selective Service System for acceptance of (3) above by their organizations. These conferences are to be called by Washington representatives of PAW, who should be notified through the District Director's Office when the standards have been accepted by the District Industry.

(6) Return of the standards to all participating companies with general instruction as to filling in the Replacement Schedules and specific instructions as to filing dates. This notice should contain a request to return copies to PAW (Washington) and to the committee.

(7) Filing of 42-A's by individual companies, together with individual requests to the local offices of USES for replacements.

(8) The preparation of state summaries by the committee for presentation to WMC and Selective Service and for the guidance of the Industry Committee and the preparation of a State Manning Table for all smaller industries not filing individual tables.

(9) Forwarding by committee to Washington of State Summaries and Standards and the Manning Table composite.

National Program

(1) BLS Tabulation and analysis of State Summaries in graphical form.

(2) Appointment of subcommittee under PIWC Manpower Committee of one representative from each district committee to be called Committee on Manpower Standards.

(3) Analysis of Standards by districts and preparation of master list of title and descriptions and training periods for industry at large.

(4) Presentation of master list to PIWC and Industry Committees for acceptance.

(5) Conferences with National SS and WMC to be called by PAW for acceptance of master list.

(6) Instructions from committees to every petroleum company on use of master list or subsequent Replacement Schedules.

(7) Forwarding to WMC and SS of master list for inclusion in Dictionary of Occupational Titles and for Standards in Petroleum Industry.

Rodessa Operators Protest Proposed Gas-Oil Ratio; Decision Delayed

Operators in the Rodessa field of Arkansas, Louisiana and Texas, meeting with conservation officials in Shreveport, last week, opposed a new schedule involving a gas-oil ratio of 2000 to 1 for that field, on the grounds that such schedule not only would eliminate gas production vital to war industries in that area, but would force abandonment of oil wells now producing valuable lubricating oil. Enforcement of the proposed schedule would also mean the closing of gasoline plants now in operation, and cause plans for construction of other plants to be given up.

As a result of evidence presented, no decision was made at the meeting, and representatives from the three states will confer at a later date and decide upon definite conservation orders for the field.

PAW Engineer W. J. Murray, from Austin, Texas, stated that residue gas used at Rodessa for gas lift in lieu of other artificial lift is not considered a waste. He said also that operating ratios are shown to be in excess of 28,000 to 1 in the Louisiana part of the field, they are as high as 57,000 to 1 in parts of the Texas area of Rodessa, and in other parts of the field, these ratios reach as high as 90,000 to 1. He suggested that gas production which could not be utilized, be shut in and that every effort should be made to make use of all available equipment as an outlet for surplus gas.

In the Arkansas area of the field,

there are 40 oil wells flowing approximately 600 barrels of oil per day, according to O. C. Bailey, chairman of the Arkansas Oil and Gas Commission. Of the 20,000,000 feet of gas produced along with this oil, part is processed and sold and the rest returned to the producing horizon, the commissioner related.

Pointing out that the Rodessa field is now in its last stages of production, Albert Trube and Jack Baumel of the Texas Railroad Commission, stated that the proposed schedule would eliminate bottom-hole pressure and acreage factors, substituting a 100-percent per-well allocation formula based on potential tests and reports which are now limited by the present gas-oil ratio.

H. W. Bell, director of minerals, Louisiana State Department of Conservation, replied that where a present formula of allocating allowable was outmoded, conditions in the field do not allow a few wells, such as at Rodessa, to be used as determining the formula for production. He suggested as a possible formula, allocation of 65 percent per-well and 35 percent acreage, assuming an allowable on 2000 to 1 gas-oil ratio. Further suggestions were made in this connection by W. A. Watkins, district superintendent for The Carter Oil Company, who proposed a field allocation on a 50 percent per-well and 50 percent acreage basis. R. O. Garrett, engineer, Arkansas Louisiana Gas Company, amended Garrett's proposal by substituting 50 percent deliverability for 50 percent per well.

Garrett said his company was now purchasing and would purchase larger quantities of gas from the Rodessa field. He told of plans for building a new compressor plant for the company's pipe-line system. However, he said it would be necessary for operators to maintain the life of producing wells to justify such a plant.

A Phillips Petroleum Company representative stated that his company's gasoline plant at Lodi, constructed at a cost of $1,000,000, would be forced to close down if the proposed schedule were put into operation.

It was shown by one company that out of 21 producing wells in the field now making 381 barrels of oil daily, the proposed schedule would cut production to 63 barrels and 11 of the wells would have to be abandoned.

Arkansas Oil and Gas Commission officials who attended the hearing were Alec Crowell, director; Basil Hoag, O. C. Bailey, chairman, and Lloyd L. Jordan, district engineer. Texas Railroad Commission officials included Jack Baumel, director; Albert Trube, engineer, and J. A. Butts, Kilgore, district engineer. Louisiana Conservation Department officials at the hearing were J. Huner, state geologist; H. W. Bell, director of minerals; P. S. Ervin, engineer; Joseph L. McHugh, commissioner; Hale Boggs, attorney, and Major B. A. Hardey, chairman of the Louisiana Minerals Board. Petroleum Administration for War officials included D. E. Buchanan, Houston, district director; Robert E. Hardwick, Fort Worth, attorney; and W. J. Murray, Jr., Austin, consulting engineer. E. G. Dahlgren, Oklahoma City, represented the Interstate Compact Commission and Dr. Frank Patton, Washington, assistant director of reserves, was in attendance.

Permian Basin Sour Crude Begins Moving Through Big-Inch, 115,000 Barrels Daily

Initial deliveries of Permian Basin sour crude to War Emergency Pipeline, Incorporated, Longview-Norris City 24-inch carrier at an average rate of 115,000 barrels daily during the first month of a two-month schedule was under way late last week. Inclusion of this oil along with regular batched shipments from the East Texas field replaces temporary movement of 1,000,000 barrels of Gulf Coast Grade "B" 33-gravity oil.

Atlantic Pipe Line Company was due to make the initial tender of sour oil to the Longview terminal through suspension of movement of sour oil via the East Texas field to Jefferson, Texas, where the company has been loading 16,500 barrels daily in tank cars for The Atlantic Refining Company's refinery at Philadelphia. Diversion of this stream to Longview tankage was delayed pending the emptying of the East Texas field unit of the remaining portion of the 300,000 barrels of heating oil brought from the Gulf Coast by American Pipe Line Company's reversed line. This single batch of heating oil is due to remain at Longview for several months before entering into the big inch, since it will require the assembly of clean cars for relaying from Norris City east.

Atlantic Pipe Line Company and Sun Pipe Line Company are slated to handle 40,000 barrels each daily during the first month of the sour-oil movement. Pan American Pipe Line Company is booked for 25,000 barrels daily, including 15,000 to 18,000 barrels daily from current runs of Texas-New Mexico Pipe Line Company into Houston, with the remainder coming from storage in the latter terminal. Humble Pipe Line Company's direct contribution into Longview consists of 10,000 barrels daily via Hearne and Mexia while it is also turning 5000 barrels daily in New Mexico and 10,000 barrels daily in West Texas to Atlantic Pipe Line Company for movement to Longview.

Gulf Refining Company and Magnolia Pipe Line Company are providing 10,000 barrels and 6000 barrels daily of sour oil, respectively, towards filling the cross-country carrier. However, their current receipts and refiney demand are nearer a balance than other contributors of sour crude.

The volume of Permian Basin oil entering the big-inch line is scheduled to be cut back to 70,000 to 75,000 barrels daily during the second month of the movement in order to make room for an equal volume of sweet crude from the Corpus Christi district. The latter would be routed via Southwest Emergency Pipe Line Incorporated's converted 14- and 16-inch gas line to Houston thence via Pan American Pipe Line Company and a combination of Sinclair Refining Company and Atlantic or Sun to Longview.

Preliminary fluid tests under nominal pressure given the Corpus Christi-Houston converted coupled gas line indicates that considerable reconditioning work will be necessary before normal pumping pressure with oil load can be attained. This unexpected development will necessitate longer and heavier withdrawals of crude from the Permian Basin after the first month when excess stocks of sour oil in the Houston-Beaumont district will have been depleted. An increase of 21,000 barrels in daily allowables in the Permian Basin was originally scheduled for the second month.

Mid-Continent Section API To Meet in Tulsa This Week

American Petroleum Institute Division of Production, Mid-Continent District, will hold its spring meeting at the Mayo Hotel, Tulsa, May 20 and 21. The program follows:

Thursday, May 20, registration in the morning and luncheon at noon. The afternoon session will be devoted to secondary-recovery and papers will be presented on these topics: "Economics of Water Flooding," Donald P. Oak, Lynde, Walter & Darby, Tulsa; "Gas Repressuring, Glenn Pool," K. B. Barnes, Gulf Oil Corporation, and J. F. Sage, Sinclair Prairie Oil Company, Tulsa; "Flowing vs Pumping Operations in Water Flooding," Tom Lawry, Forest Producing Company, Nowata. Dinner and a technicolor picture "The Story of the Big-Inch Pipe Line," completes the program for Thursday.

The Friday, May 21, session will be given over to "Drilling and Production Practice," with these papers: "Maintenance of API Oilfield Equipment Standards," H. W. Ladd, Stanolind Oil & Gas Company, Tulsa; "Efficient Rate of Production," H. H. Kaveler, Phillips Petroleum Company, Bartlesville; "An Experimental Investigation of Volumetric Efficiency of Sucker-Rod Pumps," Glen M. Stearns, Oklahoma University.

Friday afternoon session on "Government Regulations and Plans Affecting Production," includes: "New Frontiers in Metallurgy," T. McLean Jasper, A. O. Smith Corporation, Milwaukee; "Joint Use of Production Facilities and Manpower," H. M. Stalcup, Skelly Oil Company, Tulsa; "Preference Rating Order P-98-b and Controlled Materials Plan Regulations as They Affect the Supply and Distribution of Materials," Frank Watts, Director of Materials, PAW.

A wartime dinner at the Tulsa Club, at which Dr. George S. Benson, President Harding College, Searcy, Arkansas, will speak on "The Flame That Must Not Die," concludes the meeting.

Texas Hearing

The Texas Railroad Commission has scheduled a hearing for May 20, on the Wasson field, Gaines and Yoakum Counties. Operators have requested that they be given an order which will allow them to produce the total monthly allowable within a few days.

Wasson allowables have been very low for several months and operators pointed out recently at a statewide hearing that it was both difficult and expensive to maintain producing operations for 15 to 20 days of each month when allowables assigned could be produced easily within two or three days.

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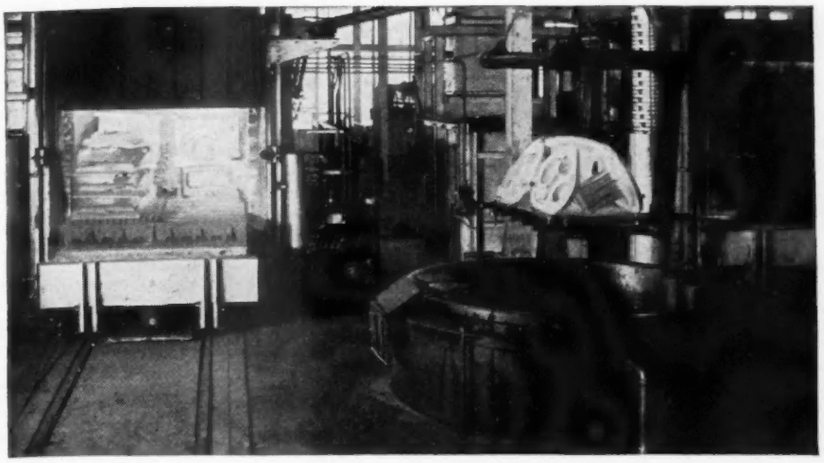

HAVING trouble obtaining critical low alloy castings? Investigate the possibilities of Circle Ⓛ Heat Treated Carbon Steels! These steels meet specifications for machinery, structural and other castings where high strength is extremely important.

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Lebanon offers these emergency materials to aid war industries who require critical low alloy steels but who cannot extend the necessary priorities to procure critical low alloy steels.

Lebanon foundry engineers and metallurgists have had close contact with war production requirements since the beginning. Their experience in solving today's type of industrial problems is available to interested organizations.

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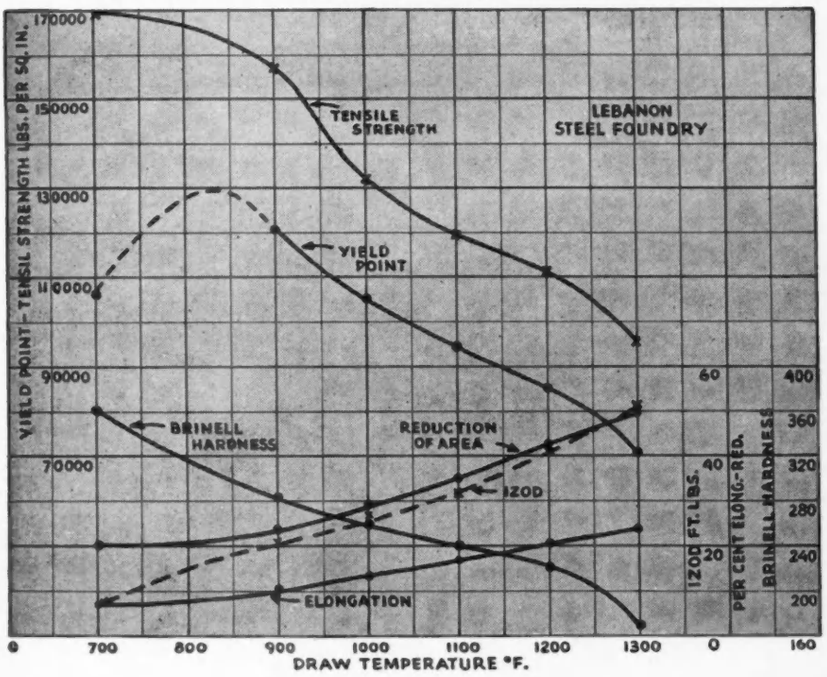
AVERAGE PHYSICAL PROPERTIES OF CIRCLE Ⓛ HEAT TREATED CARBON STEELS AFTER WATER QUENCHING FROM 1525° F. AND DRAWN AS SHOWN*



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LEBANON DESIGNATION	FEDERAL SPECS.	U. S. NAVY SPECS.	S.A.E. SPECS.	A.S.T.M. SPECS.	NOMINAL ANALYSIS C.	SI.	MN.	HEAT TREATED TO GIVE FOLLOWING PHYSICALS (MIN.) T.S.	Y.P.	EL.	RED.	B.H. (Avg.)
Regular Heat Treatment												
Ⓛ-A	QQ-S-681b Class 3	49-S-1 Class A	1040	A-27-39 Grade H-1	0.40	0.40	0.70	80,000	40,000	17	25	170
HIGH TENSILE—Special Heat Treatment—(Liquid Quench and Draw)												
Ⓛ-C*					0.40	0.40	0.70	100,000	75,000	15	30	200
Ⓛ-D*					0.40	0.40	0.70	125,000	85,000	10	20	250

*Restricted to 1½" sect. max.

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Stocks of Fuel Oils Increased, But Gasoline Storage Reduced Sharply

In reflection of the current large and growing demand for petroleum products, crude oil production reached a new high for this year in the week ended May 8; and refinery runs, although down considerably from the previous week, were nevertheless 9% above the corresponding level a year ago.

Somewhat better results than previously were achieved in regard to heavy fuel oil, as stocks were increased over one half million barrels in the face of the fact that production for the week was 461,000 barrels less than in the preceding week. Light fuel oil production was increased and there was a substantial addition to stocks. Gasoline production was cut back, and there was a heavy drain on stocks.

Although refinery production of residual fuel oil was 461,000 barrels less in the week of May 8 than in the previous week, the output of 7,853,000 barrels was 12 percent in excess of that of 6,993,000 in the corresponding week of last year. Standing at 67,577,000 barrels May 8, stocks of residual fuel oil were 12 million barrels (15%) below the 79,939,000 held May 9, 1942.

In the effort to build up stocks of light fuels for next winter's use, production totaled 3,795,000 barrels in the week of May 8, 166,000 barrels more than in the previous week and 761,000 more than the 3,034,000 barrels produced in the like week last year. The production thus was 25 percent above the year-ago output. Stocks of gas oil and distillate fuel totaled 31,663,000 barrels on May 8, up 461,000 from the week before and 2,025,000 above a year ago, the latter an increase of 7 percent. The production of gasoline totaled 10,581,000 barrels during the week, 396,000 less than in the previous week but 210,000 barrels (2%) more than in the corresponding week last year.

Stocks of finished and unfinished gasoline in the United States were reduced from 90,029,000 to 88,166,000 barrels, almost a two million barrel reduction; and the new total was 12,614,000 barrels, or 12½ percent, less than the 100,780,000 barrels on hand May 9, 1942. This decrease in stocks of gasoline is fairly well in line with the curtailment of the use of gasoline.

The crude oil production of 4,020,000 barrels per day represented the first rise above the 4,000,000 barrels per day mark for this year. The previous high for 1943 was reached about a month ago. The new record output of the year was nearly 500,000 barrels a day above the production in the corresponding week last year—an increase of 13 percent. The present heavy requirements for crude are accounted for in part by the relatively low level of imports as well as the heavy use of petroleum.

Although runs to stills were 94,000 barrels a day lower than in the previous week in averaging 3,755,000 daily, they still were comparatively high, the previous week's figure of 3,849,000 having been a record for 1943. The refinery runs currently are 9 percent above this time last year, when the submarine cam-

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED May 8	May 15
Arkansas	72,600	71,950
California	773,150	780,300
Long Beach	34,350	32,150
Midway-Sunset	56,750	56,300
Kettleman Hills	43,600	41,550
Wilmington	95,100	95,550
Rest of State	543,350	554,750
Colorado	6,650	6,600
Illinois	236,150	209,650
Salem	31,300	28,900
Louden	39,800	34,700
Other New Pools	153,650	135,050
Old Pools	11,400	11,000
Indiana	14,150	15,200
Kansas	293,050	305,550
Kentucky	21,450	23,000
Louisiana	348,500	348,150
North	88,900	86,900
South	259,600	261,250
Michigan	58,700	60,450
Mississippi	54,550	52,550
Missouri	95	95
Montana	23,750	20,000
Nebraska	2,200	2,100
New Mexico	97,300	97,100
New York	14,650	14,050
Ohio	9,000	8,500
Oklahoma	346,950	321,300
Oklahoma City	64,950	57,150
Seminole Area	78,500	74,150
Rest of State	203,500	190,000
Pennsylvania	49,500	44,850
Tennessee	35	35
Texas	1,504,150	1,503,850
Upper Gulf Coast	375,450	375,350
East Texas Field	339,400	339,350
Rest of Eastern Texas	124,650	124,700
Lower Gulf Coast	138,850	138,900
Southwest Texas	58,300	58,350
South Central Texas	17,150	17,000
West Texas	226,900	226,750
North Texas	132,050	132,200
Panhandle	91,400	91,250
Utah	10	10
West Virginia	10,650	8,200
Wyoming	97,900	97,800
Total United States	4,035,140	3,991,290

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gas Oil & Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,020	5- 8	3,849	5- 1	242,916	5- 1	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	82,420	1- 2	30,732	4- 3	66,991	5- 1

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas Oil and Distillate Production Weekly	Gas Oil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	.....	29,240	.....	81,107
May 30	3,877	3,522	255,023	10,478	95,355	.....	31,384	.....	79,628
June 27	3,719	3,581	253,364	10,713	88,396	.....	32,851	.....	77,304
July 25	3,691	3,658	249,262	10,864	82,281	.....	35,966	.....	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.....	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.....	45,945	.....	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 1	3,919	3,849	242,916	10,977	90,029	3,629	31,202	8,314	66,991
May 8, 1943	**4,020**	**3,755**	.....	**10,581**	**88,166**	**3,795**	**31,663**	**7,853**	**67,577**
May 9, 1942	3,544	3,435	[4]259,145	10,371	100,780	3,034	29,638	6,993	79,939
Change:									
In week	+101	—94	+881	—396	—1,863	+166	+461	—461	+586
In year	+476	+320	—16,229	+210	—12,614	+761	+2,025	+860	—12,362
In year	+13.4%	+9.3%	—6.2%	+2.0%	—12.5%	+25.0%	+6.8%	+12.2%	—15.4%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, May 2, 1942.

TRIBUTE

to a Great Industry . . . OIL

The Oil Industry, despite present restrictions, ably carries on . . . thanks to a job well done through so many years. In 1942 the Texas Gulf Coast, which this institution has the privilege of serving, drilled 1,216 new wells totaling 7,630,139 feet of hole . . . produced 137,660,213 barrels of crude from 13,437 wells. Because oil is vital ammunition, more activity is reliably forecast for 1943. We will welcome the opportunity to continue serving this great industry as we have for the past 40 years.

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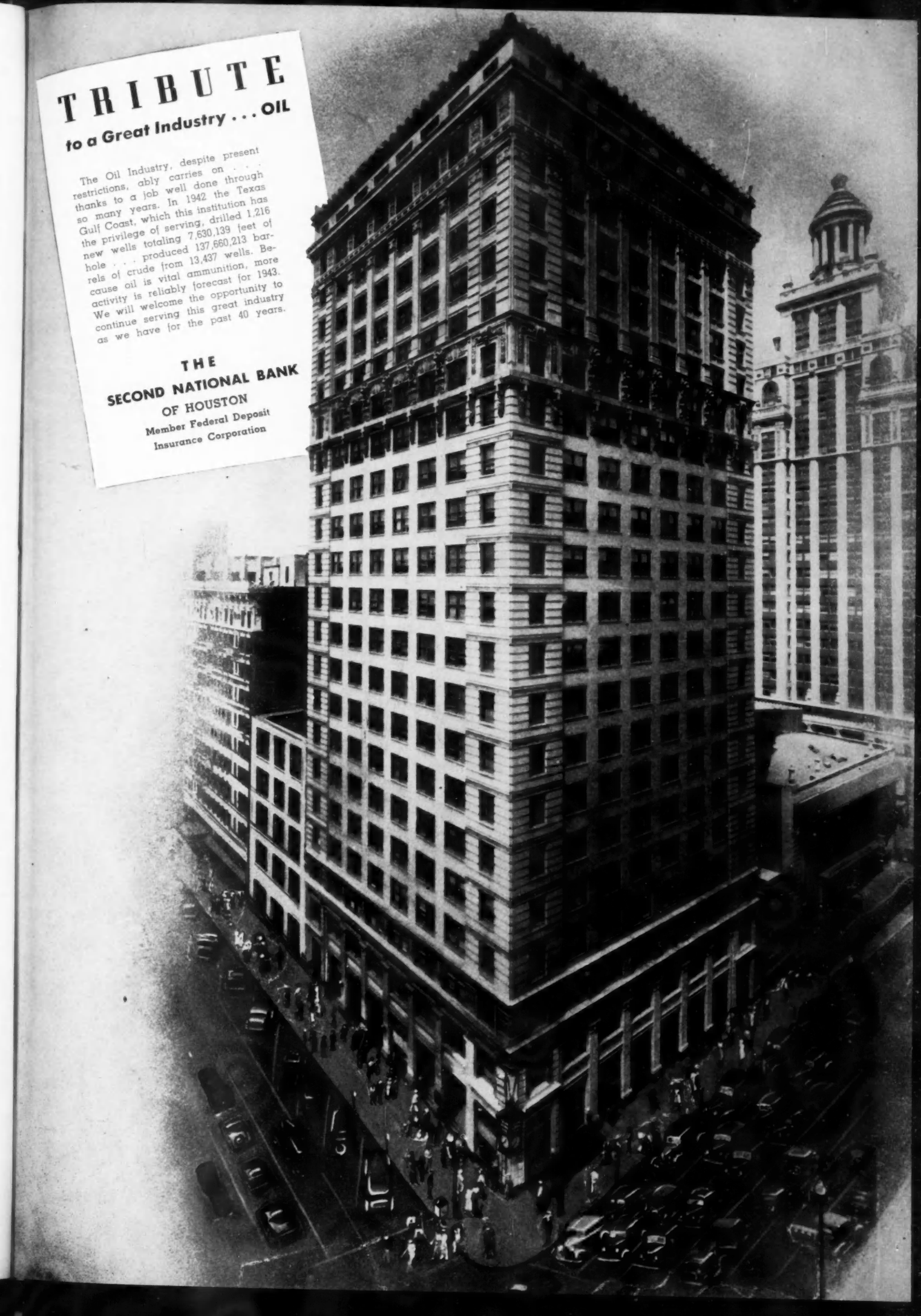

paign was seriously disrupting the industry's operations.

Accumulation of crude oil in storage continued in the week ended May 1, when 881,000 barrels went to storage. The crude stocks are now about 10 million barrels greater than at the beginning of this year. There are, however, 16,000,000 barrels or 6% less than at this time last year, the total being 242,916,000 barrels.

Markets Still Tight; East Coast Supply Declines More

Markets continue extremely tight in the East Coast district, in reflection of the increased shortage occasioned by large military requirements. (The American Petroleum Institute's index of civilian supplies of gasoline, light and heavy fuel oils on the Eastern seaboard—seasonally adjusted—declined to a new low of 25.5 percent of normal during the week ended May 8, compared with 26.3 percent on May 1 and 60.1 on September 12, 1942.)

Eastern requirements of light fuel oils have been somewhat reduced by warmer weather, but heavy fuels are in unabated demand, while the supplies of gasoline are still seriously low.

Stocks of practically all products in the Western Pennsylvania refining district are very low, as demand has continued to absorb full current production of plants. There is continued good demand for neutral oils, and the demand for bright stocks has been increased by rumors of impending governmental freezing of stocks of that product.

No let-up has occurred in the strong demand for all products in the Middle West. Gasoline is especially scarce, in reflection of the ready absorption of available material. Fuel oils also are hard to get. Difficulties in shipping add to those of adequate supply.

In the upper Mid-Continent markets remain extremely tight, with strong demand precluding the building up of low stocks. There are many inter-refinery inquries for gasoline, but no offers to sell, as plant owners find difficulty in obtaining enough crude, while holding seriously subnormal inventories. The refiners of the district are expressing concern over possible serious difficulty within a few weeks in supplying the needs of farmers, with harvesting operations not far away.

Markets for refined products on the Gulf Coast remain comparatively quiet, although there has been increased demand for gasoline, partially in reflection of the substantial volume of movement by barge and in tank cars on special permit to supply the trans-Florida canal.

U. S. Crude Production Drops 43,850 Barrels Daily

Crude oil production in the United States for the week ended May 15 declined from the high level reached during the preceding week, with production averaging 3,991,290 barrels daily, a drop of 43,850 barrels.

California production rose from 773,150 barrels in the week before, to 780,300 barrels, an increase of 7150 barrels. Kansas had an increase of 12,500 barrels daily, from 293,050 to 305,550 barrels, while New Mexico, Louisiana, and Texas remained about the same.

Oklahoma production dropped from 346,950 barrels, to 321,300, a decline of 25,650 barrels, due in large part to the high flood waters inundating properties and wells in a number of fields.

Illinois production declined 26,500 barrels, to 209,650 while Indiana rose from 14,150 to 15,200 barrels. The Eastern states also showed slight decreases.

Demand for Reserves Reflected in Lease Sales

Demand for crude oil reserves has reached sufficient strength in the East Texas field to result in lease sales at prices requiring in excess of 10 years to pay out on the basis of current production allowables and prices. Since all properties involved are fully developed, values are based upon individual wells without consideration of supporting acreage. Average sand thickness wells in the big field produced 8000 barrels gross, or $10,000 in revenue during 1942. Recent sales have placed a valuation of $70,000 to $100,000 per well for this type of production, with some small leases bringing a top price of $125,000 per well.

Stanolind Oil & Gas Company has been the largest purchaser, having paid $1,000,000 cash and $2,000,000 out of oil and gas production, subject to title approval, for Texon Oil & Land Company et al's 4 leases and 49 wells, which produced 699 barrels daily in April. The majority of these wells are marginal producers.

Stanolind Oil & Gas Company's largest purchase involved Strube-Wheelock-Collins & Black's 68 wells on 13 leases, at prices ranging between $70,000 and $80,000 per well. This deal also included Stroube et al's 14 wells in the Talco field at a reported price of $40,000 per well.

Shell's Illinois Operation Headquarters Move to Tulsa

Operations of Shell Oil Company's Eastern division, which formerly had headquarters in Centralia, Illinois, are now being handled from the Tulsa office and virtually all of the Eastern division staff has been transferred to Tulsa, as a result of a consolidation move, according to an announcement of R. B. Roark, vice president of the company's Mid-Continent area.

The merger was necessitated by the manpower situation and the heavy demands of the nation's armed forces on the staff, Roark explained. The move permits consolidation of various departments at a considerable saving in manpower and will enable the company to handle its operations along the same lines as in Kansas, Oklahoma and North Texas divisions, he added.

C. R. Bickel and C. W. Talbot, division production and land managers respectively, will remain in Centralia. H. E. Rankin has been appointed Eastern division geologist, succeeding L. M. Clerk, who has been transferred to the Los Angeles office on a special assignment.

Transfers from Centralia to Tulsa include E. P. Davis, head of title and rental section; J. T. Lamb, division legal manager; Jess Davis, Mark Dunlop and James P. Mize.

Louisiana Federal Lands Opened to Development

Federally owned lands in Louisiana were thrown open to oil prospectors May 13 by orders issued by the Secretary of the Interior in a move to widen the search for new sources of supply.

Discovery Rate

[*Continued from page 11*]

of 1943, compared with 105 in the corresponding months of 1942, a decrease of 9.5 percent. Meanwhile, discoveries of new oil and distillate pay zones in established fields were off very sharply, having totaled only 18, against 58, a decrease of 69 percent. Gas discoveries have totaled the same this year as last year, although there have been 14 new fields against 11 and only 1 new gas pay against 4.

As in earlier months, there was in April a continuation of disappointing results in finding fields in PAW District 2, where new fields of important producing possibilities are urgnetly needed, to help supply the Atlantic seaboard. That interior region accounted for only about one sixth of the potential new oil supply found, without offering any new field of outstanding importance. Michigan furnished 2 small new fields, Indiana 2 oil field extensions, Illinois 1 field of fair possibilities, 1 oil field extension, and 3 new producing strata. Oklahoma supplied 4 mediocre oil fields and 2 oil field extensions, which accounted for about one half of all prospective oil of District 2 for April.

As in March, a comparatively high proportion of the potential new oil discovered in April was on the Louisiana-Texas Gulf Coast, although East Texas showed up with 2 discoveries which may eventually develop into major fields. There were only minor discoveries in Arkansas, North Louisiana, North Texas, and West Texas. Montana furnished an oil field extension, and Wyoming a new field, a new pay, and an extension which offers some important possibilities.

California recorded 2 new gas field discoveries, but for that state, April was a black month in oil prospecting, not a single new oil discovery having been made, despite 26 wildcat abandonments including at least half a dozen very important tests carried down to objectives. Four holes averaged over 10,000 feet in depth. Passing of the fourth month in 1943 with only the Guijarral Hills, Fresno County, discovery to rate as an important discovery left California operators with scant hopes of early reversal in the downward discovery trend.

Due to be recorded eventually as being among the most significant discoveries of the year are two tests in Winkler County, West Texas, which however, are now only in process of completion, in the Ellenburger pay horizon. Located 3½ miles apart and likely to be good producers, they promise similar deep oil production from the Ellenburger in numerous other areas of West Texas.

U. S. Field Operations

Oklahoma

New Gas Field Opened; Other New Pools Showing

A new gas field, more than 30 miles west of the Guymon sector of the Hugoton gas field, has been opened in Cimarron County, Oklahoma Panhandle, by The Pure Oil Company's Cox 1, SE SW SE 16-5n-8e.

Operated as a tight hole several weeks, the well was drilled to 6280 feet and 7-inch pipe was run to 4988 feet. When pipe was perforated with 80 shots from 4670 to 4750 feet, well made an estimated 19,000,000 feet of gas daily with rock pressure at 850 pounds and was shut in. Production is from the lower Pennsylvanian sand. The wildcat is on a lease block of approximately 20,000 acres, which is one of several large blocks held by the company in that area.

Stephens County: A new producing horizon for the Velma Deep pool of Stephens County was established by Skelly Oil Company with Selby D-2, C SE SE 26-1s-5w, which is now producing from the Ordovician aged Oil Creek sand at 7460 to 7470 feet. Treated with 10,000 gallons of acid, well flowed 257 barrels of oil through ⅛-inch tubing choke. Total depth is 7670 feet.

Cleveland County: Deep Rock Oil Corporation's Harris 1, NE NW NE 11-10n-1w, almost blew out when plug was drilled to 6510 feet for test of saturation encountered in sandy dolomite which showed gas and a flow of oil on drill-stem test. The company is moving rotary tools back to the site and preparing to recement for another test.

Hughes County: Deep Rock Oil Corporation apparently has a Cromwell sand pool opener at Price 1, NEc 29-7n-10e, and is running pipe to test. During the drill-stem test, well showed from 4,000,000 to 5,000,000 feet of gas in 5 minutes and flowed oil after 18 minutes. Seven stands of oil and 6 feet of fresh water was found when tester was pulled from the hole.

Burke-Greis Oil Corporation and Deep Rock Oil Corporation's Turner 1, C SW NW 8-7n-10e, Hughes County, which drilled into the Second Wilcox to 4744 feet, is plugging back to test Cromwell sand showings at 3600 feet. Operations were delayed by high water and mud.

Garvin County: Ohio Oil Company found a show of oil, gas and good odor in sand topped at 1335 feet at its Simpson-Kelly 1, SW SE NW 14-1n-1w, but did not make drill-stem test as was first planned. Showings were cored from 1438-48 feet, and decision to drill deeper was made after close inspection of the core. Drill is now below 1500 feet.

Ohio Oil Company is drilling below 1800 feet at the relief well for Burns 1, SE NE SW 17-3n-2e, which is yielding an estimated 75,000,000 feet of gas daily from Pennsylvanian sand at 2876 feet, and is still wild. The relief well should be completed next week, operators estimated.

Pottawatomie County: Stanolind Oil & Gas Company's Atwater 1, C SE NE 34-8n-3e, a wildcat south of the McComb pool, is running pipe for test of Hunton lime topped at 4560 feet, which on drill-stem tests definitely indicated a producer. Drill-stem tests were run at 4604-22 feet and 4622-40 feet and oil was recovered on both. Total depth is 4640 feet.

Kansas

Osborne County Wildcat Shows; Zenith Extended

A new pool more than 30 miles from the nearest production is in prospect at McIntyre, Sherman and Cummings' Applegate 1, C SW 11-10s-12w, Osborne County, where Lansing-Kansas City lime carried saturation in a core taken from 3001 to 3013 feet. Operators have set 7-inch pipe to test the prospective pay. Drill will be taken to the Arbuckle if the present show fails.

Stafford County: The Zenith pool which recently has been connected on the northeast with the Peace Creek production, has been given a mile western extension by Plains Exploration Company's Kelly 1, C W½ NE SE 8-24s-11w. This well swabbed and flowed 20 barrels of oil per hour natural from Viola lime for 2 hours with 10 percent water. Total depth is 3804 feet and testing will continue when storage is available.

Edwards County: Cities Service Oil Company's Wilson 1-B, SE NW SW 4-25s-16w, wildcat, is nearing completion as a successful producer in Lansing lime. After an acid treatment, well made 50 barrels of oil in 4 hours and was then shut in for storage. The pay was found at 3957 to 3971 feet.

Wallace County: Disappointment followed Broderick & Gordon and Northern Ordnance's test of Lansing-Kansas City lime saturation at Grant Goodrich 1, C NE NE 9-14s-42w, which last week was believed a pool opener 66 miles from nearest production. Casing was perforated in the prospective pay section and 1000 gallons of acid applied. Following this treatment a very slight show of oil was recovered and a considerable amount of water. Operators plan to test other shows, but the Lansing-Kansas City was considered best bet.

Barber County: Champlin Refining Company's Allen 1, SE NW SE 22-32s-15w, which opened a new pool with Viola lime production a week ago, is now rated as one of the largest wells completed in Kansas in several years. After testing and acid treatment, well made 427 barrels of oil in 1 hour from pay at 4945 to 5012 feet. The well is about seven miles southwest of other oil production.

McPherson County: Producing from chat at 2893-2905 feet, E. B. Shawver et al's John J. Vogt 1, SE NW 1-20s-1w, has extended the Bitikofer pool nearly ½ mile southwest. The well is expected to complete for 150 barrels daily.

Illinois

Four New Fields Indicated by Showings

New fields are in prospect for Jefferson, White, Wabash and Clay counties as the result of apparently successful wildcats. Show of oil has been found in wildcat in extreme southern part of basin. Oil saturation found in Franklin County wildcat.

Jefferson County: Nash Redwine's Gilbert 1, NE SE NW 24-4s-2e, a wildcat southwest of the King pool and ½ mile from the old Iola field, now abandoned, was waiting for cement to set after setting casing on Aux Vases sand at 2650 feet. A drill-stem test at 2637-75 feet recovered 150 feet of oil and 150 feet of drilling mud. Aux Vases was topped at 2658 feet and saturation is at 2659-64 feet.

Seaboard Oil Company's Eldridge Community 1, NE SE NE 3-4s-2e, a wildcat a mile southwest of the King pool, was being put on pump after swabbing 44 barrels of oil and 10 barrels of water in 24 hours from Rosiclare sand at 2889-2907 feet. It was given a light shot.

White County: Sun Oil Company's Lutz 1, SE SW NW 30-4s-14w, 1 mile north of the Phillipstown pool, flowed 153 barrels of oil in 5 hours following a 3000-gallon acid treatment in McClosky lime at 3035-40 feet. The well has been shut in for storage. If it is completed with the same rate of production maintained on its initial test, the well will be the most productive wildcat drilled in the state this year.

Wabash County: Superior Oil Company's Viechman 1, NW SW NW 9-1s-12w, a wildcat 1 mile north of the Mt. Carmel field, has been completed on pump with an initial of 75 barrels of oil in 24 hours from Biehl and Benoist sands, total depth of 2191 feet, following a plugback from 2403 feet.

Clay County: Wagner's Pitcher 1, C SW NW 13-5n-5e, 1½ miles east of the Iola pool, yielded 1967 feet of oil in 60 minutes on a drill-stem test at 2461-66 feet, in McClocky lime. The operators had been unable to obtain casing. The Iola field is productive in McClosky but it was believed Pitcher 1 has tapped a different structure than that which makes up the Iola district.

Union County: Little Egypt Oil Company's Bassler 1, NE SE SE 35-11s-1w, 5 miles northeast of Anna-Jonesboro, found a show of oil in Devonian lime at 3080 feet which may be tested. The well has been drilling for many months with cable tools and frequently has been shut down for repairs.

Franklin County: Ohio Oil Company's U. S. Coal and Coke 1, a wildcat in NE NE NW 13-6s-3e, was drilling below 3400 feet. A show of oil was found in Lower O'Hara lime at 2895-2912 feet and probably will be tested unless other saturation is found.

New Mexico

San Juan Wildcat Produces Helium

Preliminary test given Continental Oil Company et al's Tocito 1, C NW SW 17-26n-18w, San Juan County wildcat on a 8160-acre block, rates the flow at 2,600,000 feet of gas, with helium content in commercial quantity, after using 2000 gallons of acid in basal Pennsylvanian at 6659-6700 feet. This discovery was drilled to quartzite at 6919 feet, then plugged back to 6700 feet with 7-inch at 6648 feet. Stanolind Oil & Gas Company and Standard Oil Company of Texas hold one-third interest each.

Lea County: Repollo Oil Company's State 1-F-157, C NE NE 17-23s-36e, 7/8-mile northwest of nearest production in the Lynn pool and on a strike towards isolated production, flowed 35 barrels of oil hourly after using 1500 gallons of acid at 3670-3775 feet. Three concerns will drill offsets, and company has skidded rig one location south.

R. Olsen Oil Company and Atlantic Refining Company's Langlie 1, first deep test for Lea County, recovered fresh water and mud with show of oil when tester was used on perforations at 7200-55 feet in Devonian, topped at 6990 feet.

Texas Allowable Transfers To Get Blanket Authority

Plans for presenting the gas transfer proposal at the statewide hearing, May 19, are being formulated by Texas oil operators. Provisions of this proposal would allow operators in any field to transfer the allowable from high gas-oil ratio wells to other wells on the same lease operating with low ratios.

Since the commission has granted such applications in 15 or 20 fields and has denied none, it appears that the program has the commission's approval as a general policy. For that reason, there should be little objection to its inclusion in the statewide rules.

At the April hearing held in Fort Worth, operators pointed out that this would eliminate most of the hearings for a special rule for particular fields.

The hearing this week is the first held in Austin since the Legislature convened in January.

Want Walnut Bend Deep Separate Field

Sinclair Prairie Oil & Gas Company has requested that the Winger sand recently discovered in the Walnut Bend field, Cooke County, be treated as a separate field. At a hearing before the Texas Railroad Commission last week, operators asked that it be developed on a 40-acre basis. Testimony showed that the new sand is found at minus 4680 feet, 480 feet below the shallower production in the field.

There are now 135 wells drilled to the shallow sand and 6 have been drilled to the deep sand. The company has requested that the commission allow production from the deeper horizon which is found in the Basal Strawn series.

West Texas

Clear Fork Producing Area in Howard County

The Northeastern Howard County wildcat of W. S. Guthrie and Cosden Petroleum Corporation on the Allen tract, C SE SE Section 57, Block 20, L. N. Co. Survey, opened a new Clear Fork-lime area in filling 3000 feet with oil after drilling plugs from 5½-inch pipe at 4000 feet. Production is from broken saturation at 4028-91 feet, with the hole bottomed at 4096 feet. Allen 1 is 10 miles northwest of Westbrook field, oldest Permian Basin area, and within a cluster of regular Permian failures. Tubing has been landed to acidize.

Winkler County: Magnolia Petroleum Company's Walton-State 20, deepest strike in the Permian Basin, flowed 358 barrels of 42.5-gravity oil, gas-oil ratio of 1480/1, on 7-hour test through ½-inch choke. Production is from Ellenburger perforations at 10,673-10,705 feet. This discovery filled with salt water when attempt was made to complete through perforations at 10,752-10,772 feet with 4¾-inch pipe on bottom at 10,774 feet. Ellenburger was entered at 10,460 feet followed by a 180-foot section of gas-distillate pay, and top of oil saturation was placed at 10,640 feet.

Amon G. Carter's Walton-Pure 2-C, discovery of Ellenburger production on the Keystone structure and 3½ miles east of the record depth producer for the district, succeeded in killing the flow May 11 with mud after perforating

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clogged tubing to restore circulation. This new-pay strike flowed 265 barrels of 42.5-gravity oil, averaging 7,600,000 feet of gas daily, on 3-hour test through 1-inch casing outlet from Ellenburger at 9550-9600 feet. However, a split pipe joint, or defective casing seat resulted in the oil breaking through behind the 7-inch string. Pipe has been perforated at 7010 feet to squeeze cement behind the oil string.

Stanolind Oil & Gas Company and Shell Oil Company's Blue 1, eastern Winkler County wildcat, was drilling limey-shale at 10,455 feet in Basal Simpson, with top of Ellenburger due within 150 feet.

Andrews County: Purchasers of high-priced University leases on a south strike from the Fullerton field were assured production when Fullerton Oil Company's University 1-A, ½ mile south outpost, flowed 43 barrels the first hour and 22 barrels on seventh hour after using 8000 gallons of acid in upper pay at 6990 feet. This outpost will be deepened through the other two Clear Fork saturated-lime zones.

Pecos County: Standard Oil Company of Texas' Douglas 1, initial try for deep production on the Yates structure, was drilling lime at 7765 feet without shows. Phillips Petroleum Company's Price 1, wildcat in the southeast portion of the county, was drilling black shale at 10,995 feet.

Jones County Strike Attracts More Drilling

Jones County wildcat strike by Fain-McGaha et al's Patterson 1, 2½ miles north by east of Wimberly pool, pumped 88 barrels of oil and 8 barrels of salt water initial, then 58 barrels of oil and 8 barrels of water the next 22 hours. Production is from Tannehill sand at 2195-2203 feet, being first of possible pay zones. Further development has been authorized for the 720-acre unitized block.

R. H. Roark et al's Sears-Humble 1, NWc NE T&P 37, Block 18, midway between Noodle and South Noodle pools, uncovered a new oil level in filling 1200 feet with oil in 5 hours from Hope series lime at 2700-38 feet. Pipe has been lowered to top of the pay for completion.

North Texas

Clay County Strike Attracts Five Offsets

Prolific oil flow from Mississippi was developed by the Clay County wildcat of Continental Oil Company and W. B. Omohundro on the Stephens 533-acre lease, G. W. Stipps Survey, 7 miles west by south of Bellevue, from saturated lime at 6022-49 feet. The well cleaned itself into pits promptly after drilling plugs from 7-inch, but had to be killed without test into tanks because of defective control head. This discovery is 2¼ miles east of Bobby Burns et al's Lyles 1, which entered Mississippi at 6074 feet, 76 feet low, but passed up without testing dense lime with streaks of oil at 6078-6198 feet and in dolomite at 6235-45 feet before halting 100 feet in Ellenburger at 6298 feet. Burns et al authorized 5 offset tests north and northeast of the failure on the strength of the discovery.

Young County: Anderson-Prichard

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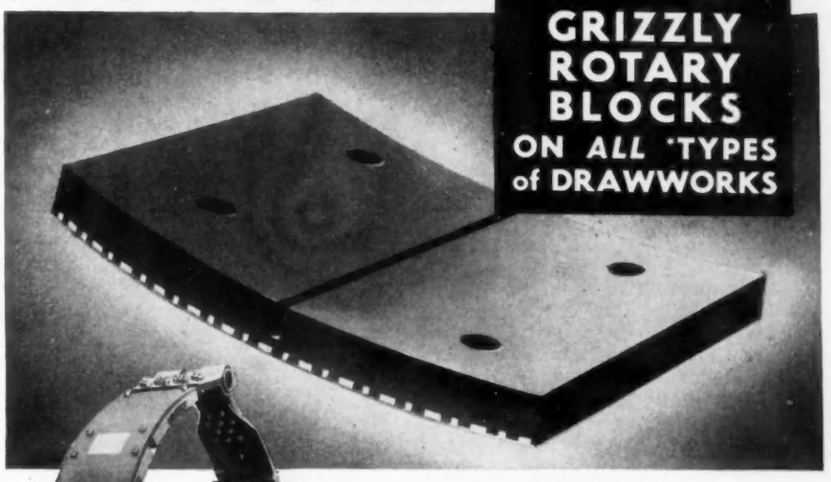

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Oil Corporation and Col-Tex Refining Company's Latimer 1, Block 17, Young County School Lands, ½-mile northwest of Murray, opened new pool in flowing undetermined volume of oil and gas into pits after using 1000 gallons of acid at 3651-54 feet in Bend, topped at 3643 feet. Tanks are being erected for official gauge.

Archer County: Phillips Petroleum Company's Wilson-Luke 1, ¾-mile southwest of Chalk-Hill pool, drilling shale at 5225 feet on 5500-foot depth contract after indicating production in Bend and possible production in Strawn at 4710-53 feet. Drill-stem test at 4885-95 feet yielded 240 feet of oil and 60 feet of oil-cut mud in 15 minutes from Bend, topped at 4881 feet.

Cooke County: Mile southeast extension for the Walnut Bend field, which has scored drilling revival due to unusually thick basal Strawn pay on the east flank, was assured when Fred Snuggs et al's McGeorge 1, Section 64, logged 14 feet of oil sand and drill-stem test at 4289 feet, recovered 300 feet of oil in 9 minutes. Drilling was resumed to fulfill 6000-foot depth contract. McElreath & Suggett and Seitz-Comegys & Seitz each own one-third interest.

East Texas

Hunt County Wildcat Testing Woodbine Showing

The eastern Hunt County wildcat of J. E. Morrisey et al on the Rollins 554-acre lease, Joseph Hellar survey, 3 miles west of Campbell, cemented 7-inch on bottom at 2814 feet to test through perforations after confirming favorable oil showings in Woodbine with electrical formation survey. Two possible oil zones were logged between 2600-2700 feet. M. P. Stewart and Paul Dalton own substantial interest in the prospect, which will continue to Paluxy if the Woodbine is non-productive.

Stanolind Oil & Gas Company's Tillson 1, recent Paluxy strike near Campbell, has been delayed in obtaining pumping equipment for completion test from perforations at 4358-66 feet.

Deep Prospects: Wickliffe et al's Hackett-Pure 1, northern Smith County Travis Peak test, logged first anhydrite stringer at 8900 feet, and was drilling shale at 8930 feet. In Wood County, Sohio Producing Company's Morgan 1, Harvey Hall survey, was drilling at 2640 feet in Pecan Chalk, topped at 2572 feet, with elevation of 497 feet. It is on southwest geological strike from Coke field. Orr et al's Rainwater 1, Alba townsite area, was drilling at 5610 feet in Georgetown lime.

Franklin County: Dual completion of Tide Water Associated Oil Company and Seaboard Oil Company's Bacon 1, recent oil strike in Travis Peak sandstone, developed a flow of 348 barrels of 41.5-gravity oil, with gas-oil ratio of 231/1, on natural test through 5/32-inch choke. Production is from perforations at 7295-7305 feet in Glen Rose (Rodessa), topped at 7279 feet. This output compares with natural flow of 209 barrels of 47.3-gravity oil, with gas-oil ratio of 554/1, through 5/32-inch choke from an aggregate of 30 feet of Travis Peak sand, topped at 7902 feet. The Texas Railroad Commission will hold a hearing May 20 to determine if the well will be permitted to produce from both zones for a bonus allowable of 320 barrels daily for 18 months. The partnership's block probably covers the structure, so development will be on a conservative basis.

Limestone County: Negotiations are underway for the drilling of a Smackover-lime test to 8500 feet adjacent to the Barron deep area, near Groesbeck. Gilmer Oil Company (Hernstadt Interests) holds 1300 acres of fee near the Pettit producing area that will be used to support the deep test. Bert Weekley et al's Strother 1-A, north offset to the pool's single oil well, tested 15,000,000 gas with 5 barrels of oil daily after acidizing through Pettit perforations at 5660-5731 feet.

Cartwright Pool: Development of this new Wood County oil area that was uncovered last month by Bobby Manziel's Bailey-Shell 1 will proceed without waiting for a pipe-line outlet. Magnolia Petroleum Company has started a south offset, and Amerada Petroleum Corporation has awarded contract for drilling Rogers 1, southwest corner of 50.8-acre lease, centering upon Sam Burch and John Polk surveys. Amerada Petroleum Corporation's Turner 1, east edge of Coke field, was drilling unusually hard sandstone at 8629 feet, probably in Travis Peak.

Southwest Texas

Slick Field Test Shows Oil in Carrizo Sand

The old Slick field on the Goliad-DeWitt County line looms as an important development in the lower coastal belt with considerable oil being recovered on a drill-stem test in Carrizo sand. Long regarded as a good prospect for production in Carrizo or Wilcox, the wildcat was drilled by Continental Oil Company, the well being Wood 1 southwest of old shallow production.

After finding salt water in Pettus at 4316-27 feet, it topped Carrizo at 7506 feet and tested gas-distillate in sands at 7503-11 feet and 7552-67 feet. A drill-stem test at 7604-21 feet, using 1500 feet of water cushion, recovered 2180 feet of 33-gravity pipe-line oil with 2900 pounds flowing pressure and 3000 jounds shut-in pressure. The test was made through ¼-inch chokes, top and bottom. This discovery, which is being drilled to contract depth before setting casing to com-

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Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston, Texas

plete, touched off a new trend play, principally for a re-examination of old Pettus prospects in the area that may have possibilities of a pay-off in the Carrizo or the deeper Wilcox. The well is 7 miles southeast of Nordheim where the Wilcox produces gas-distillate.

Karnes County: This area, which has been drawing interest for wildcat development, gained a new field last week with Transwestern Oil Company testing the discovery of the Porter field. The company's Sellers 1 flowed dry gas from Pettus, then started spraying a small amount of oil. On official gauge the well flowed 2 barrels of oil hourly along with 1,300,000 cubic feet of gas, through 13/64-inch choke with 1520 pounds pressure on casing. Perforations were made at 4122-23½ feet in bottom portion of sand, topped around 4108 feet. Total depth is 8014 feet. Location is in north corner of 128-acre tract, block 3, Shaw and Harris subdivision of Victor Blanco grant.

Nueces County: The Chicago Corporation apparently is opening a new oil sand on the west flank of Stratton field with Wardner 53 recovering 10 stands of oil and one joint of mud on a drill-stem test at 6347-60 feet. A sand carrying an oil odor was found at 6325-60 feet. This indicated producer is located in Section 10, Stratton subdivision of Paso Ancho de Arriba grant. It is 2950 feet northwest of gas-distillate production and 2 miles west of oil production on the east flank. Operators have been drilling and coring deeper.

Duval County: A second producer is seen for the recently discovered Garza field with Highland Oil Company's Garza 2-A recovering 110 feet of oil through ⅜-inch choke in sand found at 3317-27 feet. The hole was drilled to 3327 feet and 5½-inch casing set to 3317 feet. The indicated producer is northeast of the discovery and is 2 miles northeast of Kreis field.

Outpost: Stanolind Oil & Gas Company and Mills Bennett are preparing to make a test in Farmers Life 3, northeast of the discovery of Strake field, Duval County. The well topped oil sand in Government Wells at 3213 feet and cored to 3232 feet.

Texas Legislature Quits Without Disturbing Oil

The Texas Legislature adjourned last Wednesday, ending a 120-day regular session. Most of the bills affecting the oil industry did not reach final passage. Included in this group were the Stone land bill, which would have suspended the primary terms of leases on submerged areas which cannot be developed because of military activities, and the bill to validate all Rule 37 permits which have been invalidated by the courts.

A bill was passed designed to correct the pollution statutes held inoperative by the courts last January, but Governor Coke Stevenson expressed doubt that these enactments would be sufficient to correct the defects.

The House and Senate passed a resolution declaring that it was the intention of the Legislature to consider as mitigating circumstances, pollution which could not be prevented because operators were unable to obtain proper equipment during the war.

Texas Gulf Coast

Wildcat Work Showing Signs of Increasing

Wildcatting in the upper coastal district is showing signs of increasing with a number of locations being projected. A majority of the new tests are in areas that have been drilled previously, but in many cases considerable new geophysical work has been done. This data plus the subsurface data obtained in the old dry holes is resulting in the old areas being redrilled. The number of new locations for the Gulf Coast proper is far behind the amount needed to fill its quota of the 4500 wildcats in the nation requested by the PAW.

Wildcats: Sam G. Harrison and K. B. Knox, Houston, have projected Wallace-Hancock 1, 6000-foot wildcat 11 miles southeast of Hillje in Wharton County. The location is on a 40-acre tract in L. L. Miller survey.

O. W. Killam has announced location for a 7600-foot test two miles northwest of Fulshear in Fort Bend County. It is Nesbit 1 and is on a 285-acre tract in Rufus Wright survey. It is scheduled to start drilling immediately.

Crown Central Petroleum Company, Boyle Oil Company and John Mayo have announced location for Stovall 1, wildcat on Magnolia Petroleum Company farmout acreage in Midfield area of Matagorda County. Projected to 6500 feet, the well is at C NE NE, I&GN 18.

Also in Matagorda County on north

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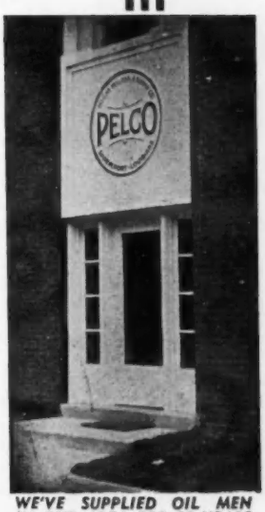

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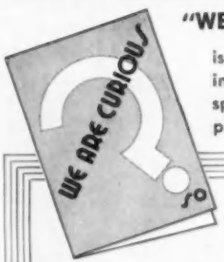

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side of North Markham field, Ohio Oil Company is extending production. The company has conducted a fairly steady drilling campaign in this area for some time, resulting in the best production of the field so far. The company's Carlson 18 is being completed after drilling to 9009 feet and setting 5½-inch casing to 8263 feet. Meanwhile, Carlson 19 has been staked farther out on north edge.

Harris County: Cities Service Oil Company is making another squeeze job in attempt to complete Witcher 1, 1 mile northeast of Pure Oil Company's gas-distillate discovery at Alief. The company perforated Witcher 1 at 7925-27 feet and it was reported to be flowing gas-distillate, no gauge released. The hole is bottomed at 8708 feet with 5½-inch casing set to 7980 feet.

Louisiana Gulf Coast

Good Well Completed At Avery Island Dome

Although wildcatting is still at a low ebb in the coastal sector, one well is testing that is drawing considerable attention and already has assured the opening of a gas-distillate field with the possibility that it may produce oil. The discovery is at Egan in Acadia Parish. The large Avery Island dome in Iberia Parish also is back in the development spotlight with a well being completed, one of the best for the area so far.

Acadia Parish: Sun Oil Company has killed the gas-distillate flow in Daily 1, wildcat on Egan prospect, Section 31-9s-1w, reportedly to make more tests in higher sands. The discovery has been producing from perforations at 10,610-25 feet and on one gauge flowed 12 barrels of distillate in 9 hours through ⅛-inch choke with 3580 pounds pressure on tubing and 1800 pounds on casing.

Iberia Parish: Humble Oil & Refining Company apparently has completed the best well so far in the Avery Island field with Petit Anse 4 in Section 25-13s-5e, flowing 187 barrels daily through ⅛-inch choke on preliminary test. Perforations were made around 7030 feet, while Petit Anse 2, the discovery producer, is flowing from perforations at 8994-9003 feet.

East Baton Rouge Parish: William Helis et al have completed potential gauge on Nelson 14, new sand opener in University field. The well, located in Section 36-7s-1w, was perforated at 9590-96 feet and flowed 135 barrels of 42-gravity oil daily through 3/32-inch choke with 1700 pounds on tubing, casing sealed.

St. Charles Parish: Gulf Refining Company has completed a test on the best well so far drilled in the Bayou Couba field. Delta Securities 3, Section 13-15s-21e, was perforated at 6450-70 feet and flowed 262 barrels of 35.6-gravity oil daily through 5/32-inch choke. Total depth is 6612 feet in sandy shale with 5½-inch casing set to that depth.

St. Mary Parish: Atlantic Refining Company is reported to have encountered oil shows in Adeline Sugar 1, wildcat in North Jeanerette area, Section 19-13s-9e. The well is bottomed around 12,314 feet in shale. Although details have not been released, the show was reported encountered below the 10,000-foot section.

North Louisiana

Tensas Parish Strike May Be Two-Mile Extension

Opening of a new Wilcox producing area for Tensas Parish or a possible 2-mile northwest extension for Lake St. John production was established when The California Company and Carter Oil Company's Rhodes 2, NW 28-9n-10e, flowed 5 barrels of oil an hour, no salt water, using a 3/16-inch choke for a 3-hour test. The well was closed in until storage tanks are completed. Rhodes 2 topped Wilcox at 3370 feet and found favorable sand at 3631 feet and 4570-4600 feet. It stopped drilling at 6017 feet and production was from perforations at 4435-42 feet.

The California Company's wildcat at Lake St. John in Concordia Parish will test for production. Pipe is set at the company's Community 1, SW 4-9n-10e, after it drilled to 9000 feet.

Winn Parish: Mansfield Hardwood Lumber Company's Fee 1, SW SE 8-12n-4w, was abandoned when Paluxy sand found at 5517 feet was not sufficiently saturated to encourage operators to set pipe for production test. Paluxy was topped at 4890 feet, higher than the discovery well at Calvin to the west. It quit drilling at 6328 feet.

Michigan

Two Wildcats Show; Two Extensions Fail

Showings by two wildcats are certain to draw more exploratory work to define fields but new pools in Van Buren and Missaukee counties have been limited by offset failures.

Clare County: Sun Oil Company acidized Huber 1, S½ SW NW 6-19n-3w, to a tight Dundee pay at 4084-4107 feet, and pumped 13 to 17 barrels per day. This wildcat is on a structure that has been under close exploration for several years. It is four miles northwest of a wildcat that produced 1505 barrels per day initially from the Dundee in 1940 and went dead, and seven tests in a half mile radius subsequently were dry.

Unable to recover tools, Pure Oil Company abandoned Moder 1, S½ NE SE 6-18n-4w, at 5633 feet. Original objective was 6000 feet.

Newaygo County: Ohio Oil Company plugged back from 3534 to 2850 feet at Vaughan 1, S½ NE NE 29-15n-11w, and acidized Traverse lime at 2805-15 feet with 500 gallons. Well swabbed and flowed an average of 31 barrels after treatment. It failed to show in Dundee and Monroe. If produced from Traverse it will mark first producer for Newaygo County.

Missaukee County: Smith Petroleum Company's Hereweyer 1, S½ NW SW 26-22n-6w, 1320 feet west of Aetna-Prosper pool's biggest well, drilled the objective Dundee dry at 3860 feet to further limit extension possibilities.

Van Buren County: Rated as one of Southwest Michigan's best plays of the year, South Geneva was narrowed materially with a north offset failure and another a half mile to the southeast. It leaves the area with only limited prospects.

United States Well Completions

ARKANSAS

Columbia County — Stephens-Smart: R. H. Crow, Trustee's Guttrey B-1, sw nw ne 11-15s-20w, 5½-in 2595, perf Tokio 2474-86 ft, pump 200 bbls, td 2658 ft.

R. H. Crow, Trustee's Hall B-1, sw sw nw 11-15s-20w, elev 273 ft, perf Tokio 2428-32 ft, pump 7 bbls hr, 6% bsw, td 2641 ft.

R. H. Crow, Trustee's Smart F-1, sw nw sw 12-15s-20w, perf Travis Peak 3354-64, 3367-84, 3390-3400 ft, pump 15 bbls, td 3887 ft.

G. H. Vaughn's Rhinehart 1, se se 11-15s-20w, Tokio, pump 153 bbls, 4004 ft.

Ouachita County—Stephens-Smart: G. H. Vaughn's Johnson 1, ne sw 7-15s-19w, Travis Peak, pump 20 bbls, 4160 ft.

Lafayette County — Midway: Gene Goff's Darnell 2, ne ne 9-15s-24w, Smackover lime, flow 184.8 bbls, 10/64-in, 6529 ft.

Union County—Hillsboro: Hunt Oil Co.'s Burnside 1, se ne ne 24-18s-14w, pump 38 bbls, 2802 ft.

Union County—Smackover-Norpleet: Cresslenn Oil Co.'s Trimble & Mahoney 1, sw se 15-16s-15w, pump 15 bbls, 1991 ft.

ARKANSAS WILDCATS

Calhoun County—Failure: Placid Oil Co.'s Southern International 2, sw sw 35-15s-14w, abnd 2564 ft.

Columbia County—Failure: McAlester-Southwood et al's Staggs 1, nw sw 10-16s-20w, abnd 6935 ft.

Little River County—Failure: W. S. King's Stubblefield et al 1, nw ne ne 10-21s-30w, abnd 1179 ft.

Miller County — Failure: Northern Ordnance's Adcock A-1, nw nw 1-19s-28w, abnd 6706 ft.

Scott County—Failure: Athletic Mining Co.'s Waldron 1, nw sw se 8-3n-29w, abnd 4024 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Shell's 147-29, se nw se 12-29-21, pump 84 bbls 17-gr, perf 2179-2161, 2139-2079 ft, black shale 1933 ft, Kreyenhagen 2296 ft, td 2300 ft, pd 2180 ft.

Standard's 17-35A, sw sw se 35-19-15, pump 47 bbls 20.8-gr, 152 ft perf 3113 ft and completed 2957 ft, td 3115 ft.

Texas Co.'s C-8, ne se se 6-20-15, pump 15 bbls, 31 ft perf 2404 ft, td 2450 ft, pd 2405 ft.

Kern County—Belridge South: Belridge Oil Co.'s 56A-34, sw nw se 34-28-21, pump 49 bbls 14-gr oil, 21 water, 267 ft perf 785 ft and completed 470 ft, td 785 ft.

Belridge's 57-34, nw sw se 34-28-21, pump 58 bbls 13.5-gr oil, 22 water, perf 420-608, 693-750 ft, completed 416 ft, td 750 ft.

General's Belridge 10-12, pump 21 bbls 14.9-gr oil, 14 water, 145 ft perf 1029 ft, td 1030 ft.

General's Belridge 39-12, pump 61 bbls 14.9-gr, 175 ft perf 1086 ft, td 1087 ft.

U. S. Navy's 25-1G, ne nw sw, 1-31-24, pump 404 bbls, 55 ft perf 3234 ft, completed 3186 ft, td 3247 ft.

U. S. Navy's 45-27S, ne ne sw 27-30-24, pump 352 bbls 17.5-gr, perf 3486-3501 ft, td 3551 ft, pd 3535 ft.

U. S. Navy's 41-34S, ne ne nw, 34-30-24, pump 336 bbls 20.2-gr, 213 ft perf 3243 ft, td 3443 ft, pd 3246 ft.

Kern County—Kern Front: General's Wetmore 3, ne ne se 14-28-27, pump 42 bbls 14.2-gr oil, 18 water, 168 ft perf 1927 ft, td 1971 ft.

Kern County—Lost Hills: Universal Cons. Oil Co.'s 50, sw ne se 32-26-21, pump 4 bbls 20.8-gr oil, 1 water, 539 ft perf 1765 ft, td 1771 ft.

Universal Cons. Oil Co.'s 53-9, sw sw ne 32-26-21, pump 6 bbls 20.8-gr, 595 ft perf 1730, td 1750 ft.

Kern County — Midway - Sunset: Chanslor Canfield Midway Oil Co.'s 53-9, ne se sw 9-32-23, pump 47 bbls 16-gr oil, 5 water, perf 1705-1650, 1485-1465, 1450-1440, 1410-1405, 1280-1265, 1215-1205, 1195-1165 ft, td 1861 ft.

Chanslor Canfield Midway Oil Co.'s 57-9, se ne nw 9-32-23, pump 10 bbls 326 ft, perf 2972 ft, td 3027 ft, pd 2980 ft.

Texas Co.'s 19, sw ne nw 36-31-22, pump 12 bbls 17.2-gr, 268 ft, perf 1934 ft, td 1998 ft, pd 1948 ft.

Kern County—Poso Creek-Premier: Standard's 11-9, se nw nw 9-28-27, pump 116 bbls 12.6-gr, 270 ft perf 2809 ft, completed 2534 ft, td 2810 ft.

Westates Pet. Corp.'s Cauley 42, nw sw sw 16-28-27, pump 150 bbls 14.8-gr, perf 2849-2871, 2899-2949 ft, completed 2844 ft, also perf 2740-2758 ft, td 2965 ft.

Kern County—Round Mountain: Honolulu Oil Corp.'s 24, nw se nw 20-28-29, pump 13 bbls 17.1-gr oil, 57 water, 44 ft perf 1818 ft, td 1820 ft.

Los Angeles County—Brea-Olinda: Union's Stearns 76, 1508 ft n 2987 ft w sec of lease, 7-3-9, pump 582 bbls 24.5-gr, 288,000 gas, 307 ft perf 3858 ft, completed 3546 ft, td 4418 ft, pd 3858 ft.

Los Angeles County—Montebello: Standard's Baldwin 96, sw sw se 36-1-12, pump 163 bbls, 285 ft perf 2648 ft, td 2650 ft.

Los Angeles County — Newhall Potrero: Barnsdall's R.S.F. 36, 6483 ft s 8242 ft e Corner "J," 35-4-17, flow 585 bbls 33.8-gr, 1,250,000 gas, 32/64-in, 430 lbs, 305 ft perf 6938 ft, td 6981 ft.

Orange County—East Coyote: Graham Loftus Oil Corp.'s P-4, sw se se 13-310, pump 101 bbls 18-gr, 1,000,000 gas, perf 4222-4363, 3485-3616 ft, td 4364 ft.

Orange County—Huntington Beach: J. H. Marion's Quadra 1, 25 ft s 140 ft w nec lot 9, blk H tr 7, pump 50 bbls 16.2-gr, 43 ft perf 4124 ft, completed 1085 ft, td 4124 ft.

Sacramento County—Rio Vista: Standard's Andrus Island Unit 1, nw ne nw 3-3-3, 11,987,000 gas, ⅝-in, 1447/1405 lbs, 92 ft perf 3903 ft, green sand 3823 ft, td 3904 ft.

Santa Barbara County—Cat Canyon Area: Pacific Western's Los Alamos 20, 4290 sly along w/l fr nwc ppty thence 991 ely at r/a, 36-9-33, pump no est, 590 ft perf 5898 ft, Miocene 4560 ft, td 5900 ft.

CALIFORNIA WILDCATS

Kern County—Failure: Shell's Lilly 5, 21-28-29, Jewett 1565 ft, abnd 1988 ft.

Santa Barbara County—Failure: De Mar Oil Co.'s Rowe 1, 11-4-28, gray shale 3356-3370 ft, abnd 4230 ft.

ILLINOIS

Clay County: Tidewater's Davis 8, c se se ne 15-5n-5e, Ben 2266-95 ft, Aux V 2323-43 ft, 238 bbls, 2343 ft.

Sinclair-Wyoming's S. S. Hardin 1, c se se nw 20-5n-7e, abnd 2765 ft.

Clinton County: H. A. Harom's Reed 2, sw nw 1-2n-2w, Dev 2760-65 ft, 305 bbls, 2782 ft.

Effingham County: Kingwood Oil Co.'s See B-1, c sw ne ne 34-6n-5e, Aux V 2330-52 ft, 30 bbls, 2364 ft.

Gulf's Kluthe 1, c se sw se 36-6n-7e, abnd 2543 ft.

Fayette County: Carter's Clinton Miller 4, c nw se ne 16-8n-3e, Weller 1518-36 ft, 37 bbls, 1601 ft.

Franklin County: E. S. Adkins' Peabody Coal Co. 3, c sw nw sw 18-7s-3e, Tar Sprgs 2032-70 ft, 85 bbls, 2070 ft.

Gallatin County: Cherry & Kidd's Kerwin 12, c sw sw sw 11-8s-10e, McL lm 2792-2805 ft, 27 bbls, 2806 ft.

Jefferson County: E. V. Schulte et al's Modlin 1, c ne sw se 34-3s-3e, abnd 2895 ft.

Texas Co.'s Bumpus 2, c ne sw nw 34-3s-3e, Aux V 2727-40 ft, 47 bbls, 2757 ft.

Hamilton County: Magnolia's Odell 1, c e½ ne se 17-4s-7e, L. O'Hara 3336-46 ft, 17 bbls, 3490 ft.

Texas Co.'s Shasteen 3, c nw se sw 27-6s-6e, Aux V 3088-90 ft, 32 bbls, 3110 ft.

Lawrence County: W. E. Bailor's Cunningham 1, c w½ nw nw sw 26-2n-12w, Biehl sd 1376-77 ft, 150 bbls, 1379 ft.

Wabash County: Dean & Morton's Hewins 1, sw se nw 14-1s-13w, abnd 2350 ft.

C. W. Finger's Stilwell 1, sw se se 7-1n-11w, abnd 2045 ft.

Washington County: Magnolia's Dennis 1, c sw se se 14-3s-3w, Ben sd 1264-81 ft, 10 bbls, 1281 ft.

Wayne County: Pure's Talbert 4, c sw nw ne 17-1s-6e, Aux V 3003-25 ft, 46 bbls, 3025 ft.

N. V. Duncan, Inc.'s Bean Cons 1, ne se 3-1s-8e, abnd 3177 ft.

Armour-Hageman's H. Velde et al 1, se ne se 13-1n-9e, abnd 3365 ft.

Pure's Garrison 6, nw ne se 35-2n-7e, Aux V 2928-55 ft, 28 bbls, 2955 ft.

White County: Cal Star Petroleum Co.'s Ford 42-C, ne ne nw 22-4s-14w, abnd 2961 ft.

Cal Star's Ford 49-C, c ne ne sw 22-4s-14w, abnd 2858 ft.

Jarvis Bros. & Marcel, Inc.'s Gardner 8, c nw se nw 31-4s-11e, Bridgeport sd 1454-76 ft, 20 bbls, 1476 ft.

ILLINOIS WELLS DEEPENED

Clay County: H. Luttrell et al's Reed 1, se nw ne 15-5n-5e, otd 2306 ft, Aux V 2336-70 ft, 148 bbls, 2370 ft.

Hamilton County: Magnolia's Travis 3, c ne sw se 20-4s-7e, otd 3326 ft, McL lm 3458-60 ft, 30 bbls, 3460 ft.

Marion County: Kingwood Oil Co. et al's Shanafelt 20-A, se se ne 20-2n-2e, otd 3446 ft, Trenton lm 4652-54 ft, 72 bbls, 4688 ft.

ILLINOIS WILDCATS

Clinton County—Failure: Gulf's S. Watts 1, c sw sw sw 28-3n-1w, abnd 1618 ft.

Edwards County—Failure: Ryan Oil Co.'s Bisch 1, sw se se 30-3s-14w, abnd 3063 ft.

Jasper County—Failure: Pure's Bergbower B-1, c ne se 9-6n-10e, abnd.

Madison County—Failure: McCullough Drilling Co.'s Blackett 1, c se se nw 23-3n-5w, abnd 2948 ft.

Richland County—Failures: J. R. Black et

Wells Completed in the United States in Week Ended May 15, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS: *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama														3
Arkansas	8				8				5	5	13		75	80
California	25	1			26				2	2	28	34	518	310
Colorado													8	4
Georgia														2
Illinois	14			9	23	3	1		6	7	33	42	716	718
Indiana				3	3				4	4	7	2	101	143
Kansas	25	1	1	10	37	1	1		4	5	43	36	584	603
Kentucky	5	1	1		7				1	1	8	1	103	54
Louisiana	8			2	10						10	5	207	409
North Louisiana													85	
South Louisiana	8			2	10						10	5	122	
Michigan	5			3	8	1			3	3	12	11	174	253
Mississippi	2				2						2		11	55
Missouri													3	15
Montana													58	59
Nebraska														22
New Mexico	6				6						6	5	96	154
New York	12		9		21						21	20	417	449
Ohio	1	6		7	14						14	14	319	429
Oklahoma	12	2	2	9	25	2			3	3	30	22	505	606
Pennsylvania	34	4	18		56						56	61	999	1,377
Tennessee													1	4
Texas	32	3		16	51	5	1	2	22	25	81	55	1,409	2,614
E.T.BorderCo.'s													7	
East Texas Field													2	
Rest of E. Texas	2			1	3		1		3	4	7		83	
North Texas	4			5	9	1			10	10	20	10	323	
West Central	1			4	5						5	4	119	
West Texas	10			2	12	3			1	1	16	19	329	
Panhandle	2				2	1					3	2	81	
Upper Coast	4			1	5				2	2	7	5	95	
Lower Coast	8	3		1	12			2	3	5	17	9	209	
Southwest	1			2	3				2	2	5	5	133	
South Central									1	1	1	1	28	
West Virginia		6		1	7						7	8	217	269
Wyoming													40	31
Total U. S.	189	24	31	60	304	12	3	2	50	55	371	316	6,561	8,663

* Includes distillate wells. † Includes salt water disposal wells.

al's Moseley 1, c sw ne 15-3n-9e, abnd 3017 ft.
Hiawatha O&G Co.'s Wharf 1, c nw se 11-3n-10e, abnd 3301 ft.

Wabash County—Discovery: Elmer Caudell's Price 2-C, c sw se se 23-1n-12w, Biehl sd 1453-56 ft, 100 bbls, 1456 ft.

INDIANA

Gibson County: Butler & McGinnis' Carruthers 2, sw se ne 26-1s-10w, abnd 1836 ft.
Mo-Bus-Stro Oil Co.'s Kennedy 2, ne ne sw 35-2s-9w, abnd 1162 ft.

Knox County: J. E. Bower and Sinclair Prairie's Brevoort 2, sw sw nw 11-2n-11w, abnd 1934 ft.

INDIANA WILDCATS

Bartholomew County — Failure: James C. Hamilton's Rich 1, ne nw sw 25-8n-4e, abnd 1168 ft.

Gibson County—Failure: Kingwood Oil Co.'s Witherspoon 1, c s½ nw 19-3s-11w, abnd 2669 ft.

Posey County—Failure: Carter's Robert Dixon 1, sw sw nw 29-7s-12w, abnd 2807 ft.

Warrick County—Failure: Ohio's Jones 1, ne ne sw 20-6s-8w, abnd 2027 ft.

KANSAS

Barton County — West Prusa: Black-Marshall's Krier 5, ne nw nw 18-16s-1w, basal sand 3316 ft, pump 311 bbls, 3329 ft.

Barton County—Kraft-Prusa: Sinclair Prairie's Schmidt 4, ne sw nw 20-16s-11w, Arb 3309½ ft, 5000 gals acid, pump 403 bbls, 3318½ ft.
Vickers' Barth 1, c sw ne 16-17s-11w, Arb 3308 ft, abnd 3313 ft.
Vickers' Gibler 2, c e½ nw se 16-17s-11w, Arb 3274 ft, 4000 gals acid, est pot, 913 bbls, 3285 ft.
National Refining Co.'s Roesler 1, se ne sw 14-18s-11w, congl 3305 ft, abnd 3360 ft.

Barton County—Silica: Stanolind's Thomas 6, ne nw sw 35-19s-11w, Arb 3285 ft, 1500 gals acid, pot 3000 bbls, 3300 ft.

Butler County—Eldorado: R. B. Molter & Son's Sigman 1, nw nw ne 8-26s-5e, Arb 2426 ft, pump 30 bbls, 2460 ft.

Cowley County—Rainbow Bend: Brewer & Adams' Moldenhaver 1, se se sw 28-33s-3e, Miss 3320-30 ft, pump 30 bbls, 3330 ft.

Ellis County—Bemis: Wolf Creek's Bemis D-2, c w½ ne se 33-11s-17w, congl 3530 ft, abnd 3580 ft.

Ellis County—Bemis-Shutts: Phillips' Shutts 1, c e½ e½ 5-12s-17w, salt wtr disposal, 4035 ft.

Ellsworth County — W. Stoltenberg: Cities Service's Kralich B-2, c nw sw 8-16s-10w, Arb 3344 ft, 500 gals acid, pump 169 bbls, 3366 ft.

Ellsworth County—Stoltenberg: Magnolia's Schroeder 2, c ne ne 33-16s-10w, Arb 3264 ft, 2000 gals acid, pump 227 bbls, 3278 ft.

Ellsworth County—Wilkens: Pryor & Lockhart's Schroeder 1, c n½ ne nw 30-17s-9w, Arb 3227 ft, 2000 gals acid, pump 256 bbls, 3247 ft.

Graham County — Morel: Cities Service's Morel B-4, nw nw ne 22-9s-21w, Arb 3729 ft, pot 2564 bbls, 3741 ft.

Greenwood County—Thrall-Agard: Phillips' Breech 1, sw nw sw 23-24s-9e, Bartles 2163 ft, shot 30 qts, pump 13 bbls 20 hrs and pump off, 3741 ft.

Greenwood County—Virgil: Aikman & Braden's Dalton 1, c sw ne 11-24s-12e, Miss 1692 ft, abnd 1722 ft.

Jefferson County—McLouth: Mosley & Adams' McLaughlin 2, c w½ sw nw 4-10s-20e, Miss 1425 ft, 2000 gals acid, pump 300 bbls, 1581 ft.
Young & Longwell's McLeod 4, sw ne se 5-10s-20e, Miss lm 1518 ft, 2000 gals acid, pump 220 bbls 22 hrs, 1659 ft.

Kearny County—Hugoton: Kansas Natural Gas Co.'s Hude 1, c of s 1-25s-35w, Ft. Riley, 24,000,000 gas, 2686 ft.

Leavenworth County—McLouth Area: John Bryan's G. Kell 1, c nw nw 34-9s-20e, Miss lm 1437 ft, abnd 1441 ft.

Marion County—Lost Springs: Bob Youker's Martin 4, nw sw sw 3-17s-4e, Miss 2364-72 ft, pump 15 bbls oil, 15 wtr, 2391 ft.
Veeder Supply Co.'s Srajer 1, c n½ ne se 34-17s-4e, Miss 2352 ft, abnd 2388 ft.

McPherson County — Lindsborg: Texon Oil Co.'s Graslie 1, c w½ ne se 5-17s-3w, Simpson 3465 ft, pump 340 bbls, 3470 ft.

McPherson County—SW Lindsborg: Dickey Oil Co.'s Frantz 3, c w½ sw se 24-17s-4w, Viola 3408½ ft, 3000 gals acid, pump 635 bbls, 3414 ft.
Globe and Falcon-Seaboard's Bean B-1, c w½ ne sw 36-17s-4w, Maquoketa 3407-23 ft, 2500 gals acid, pump 173 bbls, 3547 ft.

Pratt County—North Iuka: Mid-Continent's Knop 1, sw se ne 25-26s-13w, Arb 4290 ft, 3000 gals acid, flow 180 bbls 6 hrs, 4327 ft.

Reno County—Peace Creek: Transwestern's Bailey 1, se ne ne 36-22s-10w, Viola 3667 ft, 1000 gals acid, pump 39½ bbls oil, 10 wtr 4 hrs, 3699½ ft.

Reno County—Zenith: Skelly's Johnson 1, c sw ne 6-24s-10w, Viola 3704 ft, 1000 gals acid, flow 135 bbls 2 hrs, 3735½ ft.

Rice County—Keesling: Cities Service's McGlynn A-3, sw se se 17-20s-9w, Arb 3302 ft, pump 427 bbls, 3305 ft.

Russell County—Witt: Coralena's Krug 1, sw se se 4-14s-14w, Lans 2994 ft, 2000 gals acid, pump 446 bbls, 3104 ft.

Russell County — Vaughn-Neidenthal: Phil-Han's Reinhardt 2, se sw sw 19-14s-14w, Lans 2976 ft, 5000 gals acid, pump 903 bbls, 3004 ft.

Saline County—Salina: Westgate-Greenland's Reinhardt 1, nw nw sw 30-14s-2w, Simp sd 3402 ft, abnd 3415 ft.

Stafford County—Zenith: Tatlock's C. M. Krey 1, c e½ ne ne 1-24s-11w, Viola 3717-32 ft, 2000 gals acid, flow 3000 bbls, 3732 ft.
Magnolia's Hagen 1, c e½ se ne 4-24s-11w, Simps 3788 ft, abnd 3855 ft.

Stafford County—Leesburg: Continental et al's Saunders 1, nw ne se 12-25s-13w, Arb 4123 ft, pump 214 bbls, 4133 ft.

Stafford County—Jordan: Lion's Toland 1, c nw se 10-25s-14w, Arb 4359 ft, abnd 4464 ft.
Aylward Prod. Co.'s Kachelman 1, nw nw se 15-25s-14w, Lans 3690 ft, abnd 3898 ft.

KANSAS WELL DEEPENED

Kingman County — Cunningham: Skelly's Miles D-1, c s½ s½ ne 19-27s-10w, otd 4070 ft, Simp 4154 ft, 1,074,000 gas, 4168 ft.

KANSAS WILDCATS

Harvey County—Failure: Branine & Goering's McCune 1, c nw sw 1-24s-2e, KC 2075 ft, Arb 3233 ft, abnd 3270 ft.

Pratt County — Failure: Zephyr Drilling Co.'s Larabee 1, swc se 9-29s-18w, Topeka 3155 ft, Lans 3778 ft, Arb 4638 ft, abnd 4700 ft.

Russell County—Failure: Ohio's Polcyn 1, ne nw ne 19-13s-15w, Lans 3082 ft, Arb 3351 ft, abnd 3377 ft.

Stafford County — Discovery: Falcon-Seaboard's Spangenberg 1, c n½ ne se 21-22s-12w, Lans 3316 ft, Arb 3691-97 ft, pump 228 bbls, 3697 ft.

Stafford County — Failure: Helmerich & Payne's Vincent 1, c e½ ne ne 5-24s-11w, Lans 3365 ft, Viola 3764 ft, Arb 3857 ft, abnd 3887 ft.

KENTUCKY

Daviess County: J. C. Ellis and Ashby's Mayfield & Tanner 1, 2-N-31, Bethel sand, 992-95 ft, 1,847,000 gas, 995.

Henderson County: Sinclair-Wyoming's Burbank 12, 4-P-21, Cypress 2303-17 ft, 126 bbls, 2317 ft.
Trans-Tex Producing Co.'s Burbank 4-A, 4-P-21, Cypress 2299-2306 ft, 385 bbls, 2306 ft.
Farm Bureau Oil Co.'s Burbank A-7, 23-Q-21, Cypress, 2301-2313 ft, 200 bbls, 2313 ft.
Gulf's Williams 6, 23-Q-21, Cypress, 2296-2318 ft, 417 bbls, 2318 ft.
Gulf's Williams 7, 23-Q-21, Cypress, 2293-2315 ft, 443 bbls, 2315 ft.

KENTUCKY WILDCAT

Logan County—Failure: Shell's Pogue 1, 3-F-30, abnd 2316 ft.

SOUTH LOUISIANA

Beauregard Parish — Neale: Atlantic's Rice Land & Lumber 1-F, 1993 ft e & 663 ft s nwc sw 27-3s-11w, 5½-in 11,698 ft, perf 10,349-75 ft, flow 307 bbls, 12/64-in, td 11,700 ft.
Atlantic's Spears 4, 660 ft n&e of swc nw 26-3s-11w, 5-in 11,800 ft, perf 10,336-80 ft, flow 323 bbls, 3/16-in, td 11,803 ft.

Cameron Parish—West Hackberry: Texas Co.'s State 34, 2040 ft e & 6687 ft s nec 13-12s-10w, in Lake T-12s-9w, 7-in 8448 ft, perf 8220-30 ft, flow 373 bbls, ¼-in, td 9112 ft.

East Baton Rouge Parish—University: William Helis' Nelson 14, 400 ft s 31 deg w fr nec 65, th 440 ft at ra in 36-7s-1w, 7-in 9960 ft, perf 9590-96 ft, flow 135 bbls, 6/64-in, td 9960 ft. Opens new sand.

Evangeline Parish—Pine Prairie: Pan American's Crowell Land 1, 1671 ft s & 1675 ft w of nec 2-4s-1w, 7-in 8830 ft, perf 8726-60 ft and 8767-84 ft, flow 206 bbls, 5/32-in, td 8999 ft.

Iberville Parish — Bayou Blue: Navarro's Wilberts 2-B, 330 ft n&w of sec ne nw 75-9s-10e, abnd 5293 ft.

LaFourche Parish—Lake Long: Fohs, Shell and Pilgrim's State-Lake Hotard 2, 5545 ft n & 1687 ft e sec 77-17s-192, 5½-in 9409 ft, perf 9382-90 ft, flow 325 bbls, 10/64-in, td 9409 ft.

LaFourche Parish — Raceland: Amerada's Guidrez 1, fr nwc 35-15s-19e, go n 81 deg 30 mins e 3950 ft, th 317 deg e alg el tr 4110 ft, th s 73 deg w 100 ft in 35-16s-19e, abnd 9871 ft.

St. Charles Parish — Bayou Couba: Gulf's Delta Securities 3, 3400 ft s alg sel 13 fr ne cor & 660 ft w at ra in 13-15s-21e, 5½-in 6612 ft, perf 6450-70 ft, flow 262 bbls, 5/32-in, td 6612 ft.

Terrebonne Parish—Lake DeCade: Superior's LaTerre Land 3, 7260 ft n 00 deg 47 mins w & 8586 ft 12 mins 33 secs e of sec 32 in 27-19s-15e, perf 10,202-08 ft, flow 96 bbls, 3/32-in, td 12,578 ft.

MICHIGAN

Bay County—Kawkawlin: Gulf's McNally 2, n½ sw se 28-15n-4e, Dundee 2880-2910 ft, pump and flow 21 bbls, 2938 ft.

Mecosta County—Fork: Sun's Murray 5, s½ sw se 5-16n-7w, Dundee 3828-38 ft, flow 124 bbls, 3838 ft.
Gulf's Hamill 2, s½ se nw 8-16n-7w, Dundee 3830-32 ft, flow 136 bbls hr 40 min after 500 gals acid, 3833 ft.

Missaukee County—Aetna-Prosper: Smith Petroleum Co.'s Herewyer 1, s½ nw sw 26-22n-6w, Dundee 3855 ft, water 3858 ft, abnd 3860 ft.

Osceola County—Evart: Sun's Wickerham 4, n½ nw ne 28-18n-8w, Dundee 3738-44 ft, flow 400 bbls 12 hrs, 3750 ft.

Ottawa County—New Holland: Regal Dutch Petroleum Co.'s DeBries 1, c se nw 36-5n-15w, Traverse 1457-59 ft, flow and pump 160 bbls, 1459 ft.

Van Buren County—South Geneva: W. H. Clock's Grimes 1, sw nw nw 30-1s-15w, abnd 1115 ft.
Socony Vacuum's Vernum-Hills 2, sw ne sw 24-1s-16w, abnd 1099 ft.

MICHIGAN WELLS DRILLED DEEPER

Calhoun County—Albion: Continental's Turner 1, ne se ne 15-3s-4w, originally completed as wildcat gas discovery at 1639 ft, deepened, Trenton lime 3954 ft, abnd 4215 ft.

MICHIGAN WILDCATS

Allegan County—Failures: Harris Oil Co.'s Flora 1, nw ne sw 19-1n-15w, abnd 1170 ft.
W. S. Cook's Dyer 1, ne ne ne 2-2n-14w, Traverse 1508 ft, abnd 1514 ft.

Clare County—Failure: Pure's Moder 1, s½ ne se 6-18n-4w, Dundee 4124 ft, abnd 5633 ft.

MISSISSIPPI

Madison County—Pickens-Sharpsburg: Carter's Massey 1, ne nw 10-11n-3e, perf 4838-48, flow 43 bbls oil 1 hr, 3% bsw, td 4869 ft.
Phillips Petroleum Co.'s Gene 2, se se 4-11n-3e, perf 4833-39, flow 291 bbls, ⅝-in, cp 135, tp 65, td 4912 ft.

NEW MEXICO

Eddy County: Plains Prod. Co.'s Jones 3, c ne sw 24-19s-31e, pump 3 bbls, acid 6000 gals 2463-2600 ft, td 2632 ft.
Plains Prod. Co.'s Jones 6, c nw ne 24-19s-31e, pump 15 bbls, shot 110 qts 2475-2510 ft, td 2628 ft.
Western Prod. Co.'s Burch 7-C, c nw se 23-17s-29e, flow 300 bbls, 2-in, acid 10,000 gals 2780-2929 ft.

Lea County — Maljamar: Barney Cockburn et al's Miller 5-B, c se ne 23-17s-32e, flow 520 bbls, 2-in, shot 40 qts 4012-92 and 80 qts 4180-4235 ft.
Drilling & Exploration's Johns 3-A, c sw se 24-17s-32e, flow 83 bbls, 2-in, acid 3000 gals 4150-4300 ft.
Johnny Cockburn et al's Miller 11-B, c nw nw 30-17s-33e, flow 160 bbls 2-in, shot 4126-4248 ft.

OKLAHOMA

Bryan County—Cumberland: Pure's Myers 110-2, se sw nw 34-5s-7e, McLish 5681 ft, flow 312 bbls oil, 854,000 gas, 5788 ft.

Creek County—Stroud: J. J. Fleet's Charles 1, c n½ se 8-14n-7e, Prue 2856-90 ft, shot 60 qts, flow 140 bbls, 2891 ft.
J. J. Fleet's Evens-Grimm 1, c s½ ne 8-14n-7e, Prue 2851-95 ft, shot 60 qts, flow 120 bbls, 2898 ft.

Creek County — Hickory Grove: Mid-Continent's Foushee 1, c s½ sw nw 10-14n-7e, abnd 2823 ft.

Creek County—Glenn: Gulf's Oittman 40, se se se 7-17n-12e, Glenn 1409-1568 ft, input well, 1579 ft.

Grady County—Chickasha: Tiedwat et al's Forman 1, c se sw 15-5n-8w, Charleston 4863-5233 ft, perf csg, 40,000,000 gas, 5520 ft.

Kay County—Tonkawa: Ingling & Parker's Williams 1, c s½ nw se 29-26n-1w, Viola 4307 ft, 2000 gals acid, pump 6 bbls, 4321 ft.

Lincoln County — Davis City: Danciger's Humpree 1, c s½ sw sw 30-17n-4e, Bartles 3591 ft, abnd 3973 ft.

Logan County—West Navina: Cities Service's Underwood 1, c nw sw 11-15n-4w, Layton 4994 ft, shot 60 qts, swb 19 bbls, 5054 ft.

Logan County—Crescent: Continental's Meyers 2, sw sw sw 26-17n-4w, abnd 4992 ft.

Marshall County—Cumberland: Pure's Williams 212-1, se nw sw 21-5s-7e, McLish 5364 ft, flow 1296 bbls, 1-in, 710,713 gas, 5886 ft.
Pure's Metz 105-5, se nw ne 29-5s-7e, McLish 5908 ft, flow 1248 bbls, 696,000 gas, 6012 ft.

Okfuskee County—NW Bearden: Chapman & McFarlin's Deatherage 4, se nw se 1-10n-8e, Misener 3969 ft, 500 gals acid, flow 425 bbls oil, 500 wtr, 1,300,000 gas, 4004 ft.

Okfuskee County—Weleetka: Bryant & Moffit's Nuckolls 1, c ne ne 9-10n-11e, Gilcrease 2608 ft, 4,000,000 gas, 2609 ft.

Okmulgee County—Youngstown: Wise' Grayson 1, sw se nw 26-14n-11e, Wx 2894 ft, abnd 2905 ft.

Osage County—Wynona: Barnsdall's Osage 1, ne sw sw 30-24n-10e, Pink lime, 1969 ft, pump 50 bbls, 2131 ft.

Pottawatomie County—Macomb: Amerada's Webb 1, nw se se 29-8n-3e, Hunton 4662 ft, abnd 4743 ft.

Pottawatomie County— S. Macomb: Continental et al's Weaver 2, ne ne ne 32-8n-3e, Hunton chert 4712 ft, abnd 4712 ft.

Pottawatomie County—Lake Shawnee: Stanolind and Amerada's Crossland 1, nw ne nw 33-10n-2e, 2nd Wx 5076 ft, abnd 5993 ft.

Seminole County—W. Seminole: Wood Oil

Co.'s Strothers 1, sw nw sw 28-9n-6e, 2nd Wx 4226 ft, abnd 4242 ft.

Stephens County — Velma Deep: Skelly's Selby 2D, c se se 26-1s-5w, Oil Creek 7460-70 ft, 10,000 gals acid, flow 257 bbls, ⅛ tbg cke, new production horizon, 7670 ft.

Stephens County — Velma: Skelly's Stiefel B-18, sw sw ne 35-1s-5w, sand 736-49 ft, shot 10 qts, pump 7 bbls 6 hrs, 749 ft.

Tulsa County—Bixby: D. K. Chickerster's Berryhille 2-A, ne nw se 29-17n-13e, Dutcher 1740 ft, abnd 1774 ft.

Tulsa County — Bird Creek: Continental's Key 6, c n½ ne nw 9-21n-13e, Tucker 1294-1319 ft, shot 25 qts, pump 27 bbls oil, 80 wtr, 1321 ft.

OKLAHOMA WELLS DEEPENED

Osage County — Turley: F. A. Gillespie's Osage 24, nw ne ne 8-20n-12e, otd 2124 ft, sand 2149-54 ft, salt water disposal, 2198 ft.

Seminole County — Seminole City: Sinclair Prairie's Strothers 5, ne se se 27-9n-6e, otd 4095 ft, Wx 4175 ft, shot 30 qts, pump 10 bbls oil, 5 wtr, 4175 ft.

Seminole County — Earlsboro: Texas Co.'s Magruder 3, se se nw 19-9n-6e, otd 4170 ft, Wx 4213 ft, shot 10 qts, pump 5 bbls, abnd temporarily.

OKLAHOMA WILDCATS

Caddo County—Failure: Amerada's Cliff 1, nw sw ne 30-6n-10w, Garner 4735 ft, Niles 5680 ft, abnd 8320 ft.

Jefferson County—Failure: Seitz, Comegys & Seitz' Bochtold 1, c ne nw 9-6s-6w, sand 1739-61 ft and 1938-42 ft, abnd 2510 ft.

Stephens County—Failure: Beard's Davis 1, nw nw ne 2-3s-5w, abnd 2977 ft.

EAST TEXAS

Wood County — Hawkins: Humble's Dick Parrish 2, 1400 ft nsl and 1390 ft wel W. Parker sur, Wood 4218 ft, Georgetown 4615 ft, flow 447 bbls, ¼-in, perf 4560-66 ft, td 4706 ft.

Humble's W. R. Parrish 2, 2850 ft nsl and 910 ft ewl H. E. Watson sur, elev 356 ft, Wood 3998 ft, Georgetown 4420 ft, abnd 4451 ft.

Wood County — Quitman: Barnsdall and Shell's Kirkland 1, 535 ft snl and 660 ft wel 40-ac lse, Ed Goodsir sur, elev 456 ft, Paluxy series 6250 ft, sand 6270 ft, flow 138 bbls 42.4-gr, ¼-in, natural, perf 6252-6311 ft, td 6365 ft.

EAST TEXAS WILDCATS

Cherokee County—Failure: L. O. McMillan et al's Southern Pine 1, 660 ft ewl and 2440 ft nsl Edwin Harry sur, elev 275 ft, Pecan 4032-4464 ft, Austin 4850-5130 ft, Woodbine 5150 ft, abnd 5222 ft.

Franklin County—Oil Discovery: Tide Water Associated-Seaboard's A. J. Bacon 1, 440 ft out nec 123-ac tract, blk 12, John Maximillian sur, 8 mi nw Pittsburg pool, elev 435 ft, Woodbine 4010 ft, Georgetown 4634 ft, Goodland 5643-98 ft, Paluxy 5732 ft, Massive anhydrite 7128-7270 ft, Rodessa 7279-7304 ft, flow 209 bbls 47.3-gr, 5/32-in, natural, 554/1 gas, flow cp 940 lbs tp 700 lbs, Travis Peak pays 7902-11, 7930-44 and 7952-59 ft, td 8089 ft.

Franklin County—Failure: L. A. Grelling et al's Stanley 1, 698 ft ewl and 624 ft from m/n/n lines W. B. Jordan sur, elev 521 ft, Pecan 2510-2750 ft, Austin 3877-3970 ft, Wood 4415 ft, Georgetown 4995 ft, base Goodland 6080 ft, top Paluxy 6088 ft, abnd 6155 ft.

Van Zandt County—Failure: Delta Drilling Co.-Beckett & Torrans' Smith 1, 330 ft snl and 660 ft ewl n-28-ac of 257.3-ac lse, S. L. Flowers sur, elev 419 ft, Pecan 2390-2420 ft, Austin 3590-3980 ft, Wood 4512 ft, Georgetown 5315 ft, Goodland 6394 to 6452 ft, Paluxy 6492 ft, abnd 6560 ft.

NORTH TEXAS

Archer County—Vogtsberger: Tom Medders-W. D. Cline's Vogtsberger 1, 467 ft out sec blk 2, German Emigration Co. sur, flow 533 bbls, ½-in, shot 130 qts Strawn 4756-84 ft, td 4795 ft.

Clay County: J. W. Hastings et al's Turner 2, 700 ft nsl and 900 ft ewl tract, blk 55, Specht-McCutcheon sur, abnd 1265 ft.

W. H. Spradling et al's Duncan-Texaco 1, 5300 ft from nw and 2350 ft from ne lines blk 15, Bacon sur, abnd 1208 ft.

A. P. Kouri et al's Taylor 2, 233 ft from se and 450 ft from sw lines blk 45, Bacon sur, abnd 1144 ft.

Cooke County—Walnut Bend: Sun's Bacon 2, 955 ft nsl and 330 ft ewl sec 70, Fannin CSL, flow 1276 bbls, ¾-in, natural, Winger sand 5436-5510 ft, td 5519 ft.

Jack County: Chas. H. Kadene's L. Carter-Shell 4, 660 ft snl and 260 ft ewl TE&L Co. sec 3311, pump 6 bbls, sand 282-91 ft.

Montague County—Benton (East Nocona): J. A. Chapman-Ed McFarlin's Dodson 2, 510 ft nsl and 330 ft wel 60-ac lse, T. R. Jackson sur, flow 701 bbls ½-in, Strawn 4526-39 ft.

Wilbarger County: Frank Wood et al's Rio Bravo 1, 330 ft wel and 1320 ft nsl H&TC 19, blk 5, abnd 2012 ft.

Young County: Tom Humphreys et al's Steele 1, c sw sw BS&F 1, abnd 3900 ft.

NORTH TEXAS WELL DEEPENED

Young County: Bronlon Prod. Co.'s Taylor 2, TE&L 1965, otd 4010 ft, jkd 4770 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Consolidated Oil Co.'s Humphrey 2-C, 1330 ft out swc E. Heath sur, abnd 1640 ft.

W. T. Hutcheson Jr. et al's Dycus 1, 1486 ft snl and 330 ft wel blk 144, Harris subdiv, abnd 1450 ft.

F. T. Johnson et al's Lyles 1, se se nw SP 2, A-1231, abnd 1682 ft.

White & Duncan's Hallman 1, 1400 ft nsl and 330 ft ewl SP 2, A-1214, abnd 1710 ft.

Baylor County—Failure: Carl Johnston et al's Richardson 1, 330 ft out nec TE&L 3101, abnd 1713 ft.

Jack County—Failure: C. H. Peterson et al's Sewell 1, 450 ft out swc sec 3, J. B. Irvine sur, abnd 376 ft.

Throckmorton County — Failure: Anderson-Prichard Oil Corp.-Bruce Sullivan's TE&L 1691, jkd 1648 ft.

Wichita County—Failures: Cable Oil Co.'s Willis 1-D, 330 ft snl and 1650 ft ewl 250-ac tr, W. H. Anderson sur, abnd 1339 ft.

Gorman & Metzner's Parker 2, 630 ft snl and 750 ft ewl e-60-ac s½ sec 22, Palo Pinto CSL, abnd 1280 ft.

Geo. Proctor et al's Robinson 1, sec Waggoner Colony sec 305, abnd 2114 ft.

WEST TEXAS

Andrews County—West Fuhrman: Phillips' University-Texas 2, 1842 ft snl and 678 ft ewl sec 2, blk 10, flow 121 bbls, 5/16-in, acid 2500 gals 4300-4600 ft.

Cochran County—Slaughter: Devonian Oil Co. et al's Dugan 30-A, 560 ft snl and 510 ft wel lab 3, leag 55, Oldham CSL, flow 1333 bbls, 2½-in, acid 12,000 gals 4950-5008 ft.

Jerry Hawkins et al's Mallet 22-A, 580 ft out nwc lab 16, leag 47, Edwards CSL, flow 567 bbls, plus 2.2% water, cas, acid 11,500 gals 4915-63 ft.

Skelly's Tarver 2, 580 ft out nec w½ lab 8, leag 55, Oldham CSL, flow 993 bbls, 3-in, acid 12,000 gals 4990-5035 ft.

Hockley County—Slaughter: L. M. Glasco et al's Mallet 8-C, 580 ft out nec lab 17, leag 48, Edwards CSL, flow 461 bbls, cas, acid 12,000 gals 4908-49 ft.

Jerry Hawkins et al's Mallet 34-A, 580 ft out sec lab 18, leag 47, Edwards CSL, flow 729 bbls, cas, acid 11,500 gals 4925-71 ft.

Magnolia's Mallet 18-F, 580 ft out swc lab 8, leag 49, Edwards CSL, flow 1129 bbls, cas, acid 10,500 gals 4962-5028 ft.

Pecos County—Taylor-Link: Arrow Dr. Co.'s University 1, c sw sw sec 34, blk 16, abnd 1802 ft.

Runnels County: Pawnee Royalty Co.'s Stoecker 1, 660 ft out nec sec F. J. Ford-H&TC 330, blk 64, anhydrite 880-1080 ft, base Coleman jt, 1504 ft, abnd 2784 ft.

Scurry County—Sharon Ridge: D & R Oil Co.'s Van Norman-Shell 1, c nw nw H&TC 131, blk 97, pump 155 bbls, shot 1320 qts 2209-2459 ft.

Winkler County—Keystone: Peck-Croft-Hall & Likins' Campbell-Gulf 1-C-a, 440 ft out sec se nw PSL 28, blk B-3, flow 100 bbls, 2-in, shot 180 qts 3280-3327 ft.

Skelly's Campbell 2-A, 1874 ft snl and 554 ft ewl PSL 29, blk B-3, flow 132 bbls, cas, shot 230 qts 3265-3340 ft.

WEST TEXAS WELLS DEEPENED

Pecos County—Abell: Stanolind's Wright-Harris 1, 1950 ft snl and 660 ft ewl H&TC 4, blk 3, otd 5516 ft, Ellenburger 5841 ft, flow 259 bbls, ¼-in, acid 1210 gals 5831-5913 ft.

Upton County—McCamey: T.P. Coal & Oil Co.'s Lane 18-A, ne se se GC&SF 5, otd 2034 ft, pump 220 bbls, 1994-2112 ft.

T.P. Coal & Oil Co.'s Lane 21-A, nw se se GC&SF 5, otd 2031 ft, pump 7 bbls, plus 7% water, 2002-2100 ft.

WEST TEXAS WILDCATS

Crockett County—Failure: Moore Bros. and Sohio Prod. Co.'s Todd-Amerada 1, c sw sw EL 16, blk YZ, elev 2550 ft, Grayburg 1825 ft, San Andres 1945 ft, base shale 6790 ft, Crinoidal 6790 ft, Simpson 7137 ft, Ellenburger 7645 ft, abnd 7903 ft.

TEXAS PANHANDLE

Gray County: Phillips' Gordon-Step 1, se se nw H&GN 187, blk B-2, pump 150 bbls, granite-wash 3060-3106 ft, td 3150 ft.

Hutchinson County: Skelly's Crosby-Hatcher 2, 330 ft from m/n/n and 1650 ft from m/w/w lines TC 3, blk M-24, pump 108 bbls oil, 39 water, acid 1000 gals 3266-80 ft.

TEXAS PANHANDLE WELL DEEPENED

Carson County: Stanolind's McConnell 5, sw ne sw I&GN 187, blk 3, otd 3258 ft, abnd 3305 ft.

WEST CENTRAL TEXAS

Jones County: Hedrick Oil Co.'s Arnwine 1, 330 ft out nec 200-ac lse, G Martinez sur 137, abnd 2229 ft.

Palo Pinto County: T.P. Coal & Oil Co.'s Fee-Ryan 3, 6860 ft snl and 4425 ft wel I. Ryan, gas pay 3178-85 ft, jkd and abnd.

Shackelford County: Chas. J. Kleiner et al's Morris 3, se nw ne ET 187, abnd 1538 ft.

Roeser & Pendleton's Cook 1-B-117, 1029 ft nsl and 1028 ft ewl se ET 117, abnd 1735 ft.

Roeser-Pendleton-Humble's Morris 9 (53), ET 205, pump 74 bbls 1579-94 ft, td 1599 ft.

LOWER TEXAS COAST

Bee County — South Caesar: George W. Strake's Sparkman 1, 467 ft fr n&wl's 80-ac lse, T. Powell sur, 5½-in 6563 ft, perf 6538-52 ft, flow 92 bbls, ⅜-in, td 6616 ft.

Jackson County—Maurbro: Humble's Robbins 11, 2167 ft fr el & 495 ft fr sl 472-ac tr, blk 15, Benjamin J. White sur, 5½-in 5237 ft, perf 5215-18 ft, flow 312 bbls, ¼-in, td 5237 ft.

Jackson County—Mustang Creek: Renwar Oil Corp.'s Kasper 1-A, 660 ft fr el & 840 ft fr sl 300-ac tr, William Menefee sur, abnd 6782 ft.

Jackson County—Texana: Sinclair Prairie's Volkmer 2, 2000 ft s nl Francis F. Wells sur, 5½-in 5113 ft, perf 5071-75 ft, gas, no gauge, td 5113 ft.

Jackson County—North LaWard: Stanolind's Bonnot 3, 777 ft fr n'ly sl & 1841 ft fr w'ly wl A. M. Clare sur, 5½-in 5287 ft, perf 5235-36 ft, 13,200,000 gas, open flow, td 5704 ft.

Jackson County—Ganado: Texas Co.'s Tunison 9, 467 ft fr nl & 1787 ft fr w'ly wl Morris-Cummings sur 11, 5½-in 6574 ft, perf 6540-57 ft, flow 115 bbls, ¼-in, td 6574 ft.

Jim Wells County — Seeligson: Magnolia's Seeligson 43, 1980 ft fr el & 3300 ft fr sl Los Jaboncillos gr, 7-in 6264 ft, flow 163 bbls, 7/64-in, td 6264 ft.

Premont Development Co.'s Swaim 1, 666 ft fr nl & 580 ft fr el blk 1, Premont townsite sec 46, R. P. Haldeman's subdvn Seeligson Rch, 5½-in 6130 ft, perf 5249-60 ft, flow 108 bbls, 7/64-in, td 6134 ft.

Humble's King Ranch-Cabeza 16, 1980 ft fr wl & 1158 ft fr sl L. Bazan sur 18, 5½-in 5943, perf 5224-34 ft, flow 95 bbls ⅛-in, td 5995 ft.

Nueces County—Agua Dulce: W. A. Richardson's Guaranty Title 5, 510 ft fr el & 810 ft fr sl sec 305, F. Z. Bishop subdvn of Brayton tract, Palo Alto gr, 5½-in 6887 ft, perf 6853-77 ft, 26,800,000 gas, 2-in tubing, td 6910 ft.

Nueces County — Richard King: Southern Minerals' King 5-C, 3438 ft fr el & 495 ft fr nl sec 9, 5971-ac tr, Casa Blanca gr, set 5½-in 5580 ft, perf 5562-67 ft, flow 180 bbls ⅛-in, td 5580 ft.

San Patricio County — Odem: Seaboard's Welder 8-C, 467 ft fr nl & 2800 ft fr el 2010-ac lse, J. de la Garza gr, 5½-in 6753 ft, perf 542-25 ft, flow 113 bbls, ⅛-in, td 6753 ft.

LOWER TEXAS COAST WILDCATS

Jackson County — Discovery: W. Stewart Boyle's Levy 1, 660 ft fr sl & nwl of 160-ac lse in n end Morris-Cummings sur 5, 4-in liner 4910 ft, perf 4844-50 ft, 13,500,000 gas, spray oil thru 2-in tubing, td 4910 ft. Opens Sterling field.

Karnes County — Discovery: Transwestern's Sellers 1, 660 ft fr ne&nwl of 128-ac tr, blk 3, Shaw & Harris subdvn, Victor Blanco gr, 5½-in 4194 ft, perf 4122-23½ ft, gas, no gauge, td 8015 ft.

Nueces County—Failure: Sam E. Wilson's Podest 1, 467 ft fr n&wl of n½ nw sec 32, Benton subdvn of Los Sauces gr, abnd 6587 ft.

San Patricio County—Failure: Kilgore Development Co.'s Dix 1, 1890 ft fr se & 500 ft fr nel of 800-ac tr, Juan de la Garza sur, abnd 5653 ft.

Victoria County — Failure: Continental's Welder 1, 2595 ft fr nel & 1650 ft fr sel 2000-ac lse, S. A. Belding sur, abnd 10,255 ft.

SOUTHWEST TEXAS

Duval County—Sejita: Standard of Texas and Trinity Gas Co.'s Candy 2, 330 ft fr s&el's 91-ac lse, tract 28, San Pedro de Charco Redondo gr, abnd 5808 ft.

Duval County—Strake: G. W. Strake's Yates 3, 330 ft fr nl & 990 ft fr el J. Poitevent sur 321, abnd 4028 ft.

Jim Hogg County—Colorado: Sun's Thaxton 19, 5417 ft fr wl & 330 ft fr sl of Thaxton & Cordz sur 630, 5½-in 3109 ft, sand 3111-15½ ft, flow 71 bbls, 3/16-in, td 3119 ft.

SOUTHWEST TEXAS WILDCATS

Jim Hog County—Failures: Sun's Weill 3, 6368 ft fr nl & 6620 ft fr el of 25,811-ac tr, south end Palitos Blancos gr, abnd 5226 ft.

Rodney Delange and Locke Purnell's East 1, 200-ac lse, E. Tribel sur 619, s of Gutierrez field, abnd 3260 ft.

SOUTH CENTRAL TEXAS WILDCAT

Travis County—Failure: Marts & Beaven's Pearson 1, 1150 ft fr wl & 467 ft fr nl 100-ac lse, Thomas Westbrook sur, 1 mi n Elroy, abnd 1596 ft.

TEXAS GULF COAST

Jefferson County—Stowell: Texas Co.'s Koch 1, e 40-ac of 54-ac, L. Lopez sur, blk 15, 5½-in 7897 ft, perf 7825-40 ft, flow 870 bbls, ¼-in, dual completion, perf 7500-15 ft, flow 261 bbls, 11/64-in, td 7898 ft.

Liberty County—Esperson: Fidelity Oil & Royalty's Johnson 1-B, 382 ft fr e&wl of 40-ac tr, being s 40-ac of B. E. Johnson 100-ac tr, F. M. Gardner sur, 5½-in 7000 ft, perf 6936-51 ft, flow 43 bbls, ¼-in, td 7618 ft.

Matagorda County—Lucky: Stanolind's Anderson 1, 330 ft fr sl of 578-ac tr, E. Hall sur, 5½-in 7976 ft, perf 7862-74 ft, flow 607 bbls, ¼-in, td 7976 ft.

Wharton County—Boling: Danziger's Gary

3, 2370 ft se of nwl & 330 ft sw of nel of 280-ac tr, S. F. Austin 1/3-Lge, abnd 3620 ft.

Mackhank Petroleum's Farmer 16-C, begin s cor tract 9, go 228 ft ne alg sel tr, th 532 ft se at ra to lcn in James Scott sur, 5½-in 4830 ft, sand 4830-70 ft, flow 519 bbls, ¼-in, td 4949 ft.

TEXAS GULF COAST WILDCATS

Chambers County — Failure: Standard of Texas and Salt Dome's State-Trinity Bay 1, 1¼ mi offshore at Ash Point on 440-ac lse, tr 17-D in Bay, abnd 9119 ft.

Harris County—Failure: Humble's Cook 1, 159-ac tr, T&TC 65, blk 2, east flank Katy field, abnd 7760 ft.

United States Wildcat Starts

ARIZONA

Apache County: Argo Oil Corp.'s State 1, c ne ne 22-15n-29e, cable tool lcn 4000-ft Pennsylvanian test on 8000-ac blk.

ARKANSAS

Ashley County: Union's Crossett B-1, approx c s½ 2-19s-7w, dr.

Calhoun County: Placid's Freeman-Smith 5, nw se 14-16s-13w, wo.

Placid's Garet et al 1, ne sw 35-14s-15w, lcn.

Placid's Freeman-Smith 6, se sw 11-15s-14w, wo.

Placid's Freeman-Smith 8, nw ne 8-15s-14w, lcn.

Clay County: L. L. Travis Burns 1, sw sw 26-20n-7e, lcn.

Hempstead County: Barnsdall's Shultz 1, e½ ne ne 34-13s-26w, lcn.

Lafayette County: N. Hobson Whelens' C. Coleman 1, sw ne 30-16s-24w, spud.

Logan County: Star Co.'s Foster 1, sw ne 26-5n-28w, lcn.

Nevada County: McAlester Co.'s Lester A-1, sw nw sw 1-15s-20w, lcn.

Ouachita County: Jack Carnes' Roth & Cartier 1, nw se 35-13s-18w, lcn.

Union County: Sam Richardson's Doss 1, ne nw 16-17s-14w, dr.

Lion's Union 1, ne se ne 14-17s-13w, rig.

CALIFORNIA

Fresno County: General Petroleum Co. and Pure Oil Co.'s Sopac 819-9, ne ne ne 9-17-17, Helm area, lcn.

Los Angeles County: Lomi Oil Corp.'s Rowland 1, 14-2-10, Puente Hills area, material.

Sacramento County: Jergins Oil Co.'s McCormack 1, sw sw ne 30-5-5, Tornton area, lcn.

Solano County: Standard's Honker Comm. 1A, 25-3-1, approx 150 ft ely from Honkers Comm. 1, Suisun area, lcn.

ILLINOIS

Clark County: J. E. Thompson's Cooper 1, sw sw sw 18-10n-14w, dr.

Clay County: Leland Waggoner's Pitcher 1, sw nw 13-5n-5e, lcn.

Fayette County: John S. Pummell's Meyers 1, ne ne sw 14-7n-1w, dr.

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INDIANA

Shelby County: J. L. Reiger's Fee 1, ne ne nw 15-11n-8e, lcn.

KANSAS

Barton County: W. N. Bartlett et al's Schulte 1, c se se 26-19s-12w, mim.

Edwards County: Broderick & Gordon's Miller 1, c se sw 5-26s-18w, dk.

Ellis County: Schermerhorn's Leiker 1, nw sw se 17-15s-17w, dr.

Jefferson County: J. O. Jones' Lowe 1, c ne nw 26-10s-19e, lcn.

Marion County: Westgate-Greenland's Unruh 1, se ne ne 9-19s-1e, mirt.

McPherson County: Nadel & Gussman's Morrison 1, c s½ sw sw 13-17s-1w, dr.

Rice County: Phillips' Matthael 1, sec sw 19-18s-9w, dr.

Rooks County: Continental's Kriley 1, nwc 22-8s-18w, dk.

Russell County: Texas Co.'s Jellison 1, nec se 13-13s-15w, mirt.

Saline County: Deep Rock's Threlkeld 1, nec se 19-16s-1w, dr.

Sedgwick County: Lion's Creasser 1, nw sw sw 14-25s-2w, mirt.

SOUTH LOUISIANA

Cameron Parish: Continental's Hebert 1, 2761 ft e & 572 ft n swc 1-12s-8w, n Sweetlake field, lcn 12,500-ft test.

NORTH LOUISIANA

Bienville Parish: Placid Oil Co.'s Nebo B-1, sw ne 13-15s-7w, rig.

Bossier Parish: White & Hinton's Louisiana 1, sw ne 16-23n-12w, dr.

H. I. Morgan's Bolinger 1, lot 18, 38-23n-11w, dr.

Caddo Parish: H. C. Owens et al's Dominick 1, ne se 7-22n-14w, dr.

Caldwell Parish: T. L. Sessions et al's Louisiana 1, ne ne 27-12n-3e, dr.

Youngblood-Foree Co.'s Louisiana 1, se se 18-14n-3e, dr.

Catahoula Parish: Sinclair Prairie's State 1, nw se 30-9n-7e, mir.

DeSoto Parish: Oakes-Eaton et al's Ramsey 1, nw sw 27-13n-16w, sd.

Grand Cane's O'Neal 1, se nw 24-12n-15w, wo.

Grand Cane's Union 1, sw nw 22-13n-14w, wo.

Grant Parish: Sohio's Colfax 1, nw nw 22-8n-3w, dr.

LaSalle Parish: Hunt's Harris 1, nw se 26-11n-3e, dr.

Morehouse Parish: Sohio's Carter 1, ne se 34-19n-6e, dr.

Natchitoches Parish: O'Meara Bros.' Marble 1, 42-6n-5w, dr.

Red River Parish: Cryer & Reese's A. M. Adams 1, sw se 27-12n-9w, dr.

Peterson Petroleum Corp.'s Wilkinson 1, se se 11-12n-10w, wo.

Tensas Parish: Carter's Shelley 1, nw nw 19-11n-10e, lcn.

Winn Parish: Hunt's Goodpine F-27, ne sw 14-12n-5w, dr.

MICHIGAN

Arenac County: C. W. Teater's Walker 1, s½ sw sw 10-20n-5e, rig.

Kalamazoo County: Wagenaar & Alexander's Dobbin 1, nw sw se 30-1s-12w, rig.

Montcalm County: Southwest Dev. Co.'s Pardoe 1, nw ne sw 5-12n-8w, dr.

Newaygo County: C. W. Teater's State 1, s½ se sw 30-13n-12w, dr.

Van Buren County: Sohio Producing Co.'s Banks 1, n½ se sw 3-1s-14w, dr.

Zones & Goff's Kasler 1, c sw nw 14-1s-13w, lcn.

NEW MEXICO

Eddy County: J. E. Metcalf et al's Magruder 1, nw ne nw 22-21s-27e, lcn.

Schuster & Messinger's Page 1, c sw nw 15-21s-28e, salt 615 ft, dr 645 ft.

Lea County: Culbertson & Irwin et al's State 1, c sw ne 17-21s-33e, machine for 3750-ft test.

OKLAHOMA

Kiowa County: Texas Co.'s Bradley 1, ne nw se 6-7n-15w, cellar.

EAST TEXAS

Hunt County: Ohio et al's Langford 1 ,2467 ft snl and 1954 ft wel 377.56-ac tr and James Himilton sur 516, lcn 4800-ft test.

Robertson County: Magnolia's Doremus 1, 330 ft from ne and 2720 ft from nw lines Sam Kinney sur, 3 mi nw Calvert; 1920 ft nw lta 5198-ft failure, light show oil and gas 1911-16 ft, set 10-in 2100 ft.

Robertson County: Armstrong & Richardson's Marsh, Jr. 1, 660 ft from se and 1320 ft from sw lines 278-ac tr, Hugh Henry sur, testing sand 537-40 ft.

Wood County: Superior's (Cal) Carlisle 1, 330 ft out sec 51-ac tr, G. Blackburn sur, rur.

NORTH TEXAS

Archer County: Consolidated Oil Co.'s Henry 1, 330 ft out nec sec 35, blk 5, Clark-Plumb sur, lcn 1000-ft test.

Republic Natural Gas Co. and Seaboard's Powell 1, 330 ft out sec s-80 of 201½-ac tr, Wm. Henry sur A 163, lcn 1400-ft test.

White & Duncan's Ickert 1, 330 ft out swc blk 10, Meade "55" Pasture subdiv, lcn 1300-ft. test.

Wichita County: Cable Oil Co.'s Willis 2-D, 330 ft snl and 1705 ft ewl of tract in sw part W. H. Anderson sur, lcn 650-ft test.

Ernest Prod. Co.'s Warren 1-A, 330 ft nsl and 600 ft wel W. J. Smith sur, lcn.

Ernest Prod. Co.'s Warren 2-A, 225 ft snl and 330 ft wel W. J. Smith sur, lcn.

C. G. Johnson et al's Lowrance 1, 247 ft snl and 292 ft ewl sec 27, Tarrant CSL sur, lcn 700-ft test.

Young County: Anderson - Prichard Oil Corp.'s Donnell 1, 4101 ft ewl and 990 ft from m/n line of 1046-ac tr, Margaret Edwards sur, lcn 4900-ft test.

Cochran & Cain's Hearne 1, 330 ft nsl and 1093 ft wel nw¼ BBB&C 2, lcn 700-ft test.

WEST TEXAS

Gaines County: Continental Oil Co.'s Jones 3, se sw ne PSL 22, blk A-7, Clear Fork, lcn.

Reeves County: W. W. Harvey-H. H. Henderson's Rounsaville 1, c ne ne PSL 23, blk C-13, lcn Delaware test.

WEST CENTRAL TEXAS

Shackelford County: Roeser-Pendleton & Conoco's Cook 1-A-111, 1720 ft nsl and 339 ft wel sw ET 111, lcn 1800-ft test.

TEXAS GULF COAST

Harris County: Continental's Mellinger 1, 160-ac tr, sec 17, blk 4, 5 mi ne Fairbanks, lcn 8000-ft test.

Jefferson County: Texas Co.'s Broussard 1, 4300 ft fr sl & 670 ft fr wl TNO 51, lcn 8500-ft test.

LOWER TEXAS COAST

Bee County: Bridwell Oil Co.'s Sanders 1, 495 ft fr sw & 330 ft fr sel of tr in D. Hale sur, 1 mi n Beeville, lcn.

San Patricio County: E. A. Graham's Barry 1, 660 ft fr s&wl of 230-ac tr, 3 mi e of Gregory, lcn 7500-ft test.

SOUTHWEST TEXAS

Live Oak County: Fidelity Oil & Royalty's Brown 1, 660 ft fr n'ly sl & 660 ft fr el of 390-ac tr in Live Oaks School Land sur, Abst 272, lcn 4500-ft test.

SOUTH CENTRAL TEXAS

Travis County: Robert E. Fallin's Wolters 1, 1524 ft fr n & 1773 ft fr w'ly wl of 295-ac tr, Michael Green sur, lcn.

LEO C. KING has been named vice president and sales manager in a revision of officers of The Happy Company, Tulsa, and R. C. Lindley has been named secretary-treasurer. P. E. Mahaffey continues as president. Other changes include appointment of J. R. Meek, formerly of Fort Worth, Texas, who moves to Tulsa as sales engineer specializing on cooling and steam condensing equipment; J. O. Osborn, formerly with Producers Pipe and Supply Company, auditor; R. B. Rundle, district manager at Seminole, Oklahoma; Ben E. Shelton, East Texas, Louisiana and Arkansas district manager at Kilgore; Charles S. Kitch, district manager at Wichita and Ellenwood, Kansas; J. B. Allen, Jr., district manager for Illinois, Kentucky and Indiana at Salem, Illinois, and F. E. McCracken, district manager of West Texas and New Mexico at Odessa, Texas.

EARL WYATT, a former well servicing contractor, Oklahoma City, has joined Red Rock Petroleum Corporation.

Squeaks from the Bull Wheel

The "R.Q.D." Plan to End Plans

Following is an official copy of the famous "R.Q.D." Plan to End Plans which was originally devised to be offered for All Fools Day. There seems to be some dispute as to its parentage, so it is offered as a woods' colt, which nowadays in no wise interferes with the basic common sense of an idea. The plan follows:

A complete new system of industrial procedure in Washington to become effective April 1, 1943, was announced today.

It will soon be known as the RQD or Request, Quandary, and Deferment Plan. The Plan is simplicity itself, centering around 173 Requirement Agencies, with more to come. Each Requirement Agency is subdivided into Bureaus, Divisions, Branches, Sections, Units and People. The last item is an innovation, being tried for the first time in this country. Authorities differ, of course, as to if and how this feature will work.

The RQD organization has been assigned quarters in the Pentagon Building, which unfortunately has space enough to house only some of the more important Agencies. The Army has been moved out of Pentagon and is housed in tents down by the Potomac River. It is now known as the Second Army of the Potomac.

A brief description of RQD is as follows: If you want to procure materials, you make a request on Form IQ-798. One copy goes to the producer of such materials, one copy to the proper Requirement Agency, if known. (If not known, as either the U. S. Bureau of Information or the night doorman at the Carleton Hotel.) One copy goes to the Washington Zoo, and one copy to Mrs. Roosevelt's sick Aunt in Peekskill, New York.

The producer now reprints 10,000 copies for distribution among a selected list of official authorities in Washington. To get on that list you must:

1. Send $100 to Who's Who.
2. Spend at least six months in a recognized institution for the feeble minded.
3. Possess a Short Snorter Card.

The producer now takes a copy of the form, puts it in his pocket and starts for Washington. When he gets to Pentagon—but let me tell you. Last Tuesday a prominent manufacturer from the midde west entered Pentagon at 10:00 o'clock in the morning. He started wandering around, and when he came out, it was Saturday afternoon and he was in Philadelphia! Somehow or other the St. Bernard dogs that are maintained in Pentagon to track down and succor luckless visitors who get lost had missed this particular man, and it was only by the grace of God and his own splendid sense of direction that he hadn't been diverted through Corridor 986 onto the Pennsylvania turnpike.

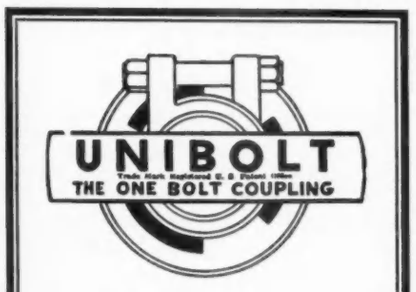
Having made clear exactly how Requests are handled, we come to the second, or Quandary phase of RQD. This is known as the basic, or preliminary decision stage, and applies only to manufacturers of Class A Products. Class A Products are not Class B Products unless the Class B products are also consumed by the manufacturer who manufactures Class A products, in which case Class B Products are considered to be Class A Products and are treated accordingly. Its as simple as that.

Now having disposed of Quandary, we come to Deferment, which is really the essence of the whole RQD Plan. To begin with, each manufacturer has to fill out a questionnaire, which is supposed to engage his entire attention through the ensuing quarter or until the next plan is ready to be issued.

A digest of the questionnaire is as follows: If during the previous quarter you used or had in inventory, any of the commodities listed in Section 1, Item 10, Article 117, state the amount so involved and remember that Section 35-A of the Criminal Code makes it a criminal offense to make any statement without certifying to the best of your knowledge and belief that the information therein contained is correct and complete so help you God and the Continental Congress. Now state the quantity put into production, receipts and shipments during the previous quarter, deduct the amount of your inventory, invert the divisor and proceed as in multiplication.

Also state your relationship to the deceased, name the Vice President of the United States during the first Coolidge Administration, who killed cock robin, and where you were on the night of June the third. Answer yes or no.

The simplicity of this plan has appealed to all who have reviewed it, and it is believed that this new system will eliminate most of the complications that have been so much criticized in plans heretofore employed.



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The bottom of your well is no place for scrap these days. Cavins has cleaned enough slips, cones, ball peen hammers, packer rubbers, chisels, etc., to build an anti-aircraft gun. Besides, our country needs more oil too. CALL CAVINS!

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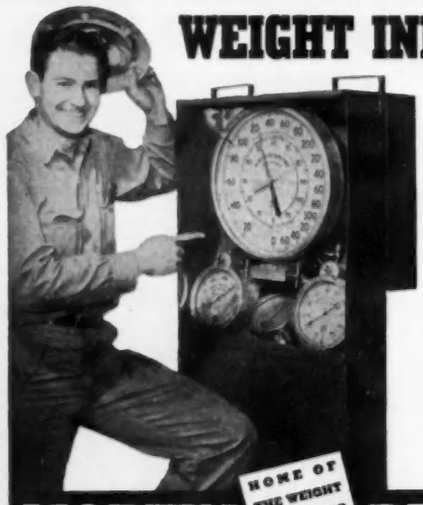
Branches: Dallas, Corpus Christi, Odessa, Pampa, Kilgore, Tex.; Lake Charles, La.; Seminole, Okla.; Ellinwood, Kan.; Artesia, N. Mex.
CAVINS
OIL WELL CLEANOUT TOOLS

Notes for the Equipment Buyer and User

The recently organized chapter of Industrial Advertisers' Association of Houston, the Twenty-Seventh chapter of National Industrial Advertisers' Association, receives its charter. President of the Houston chapter, A. B. Penny, advertising manager of Humble Oil & Refining Company, is shown accepting the charter from Allen P. Colby, (fourth from left) advertising manager of The National Supply Company, Toledo, Ohio, and vice president of National Industrial Advertisers' Association. From left to right: A. S. Volpin, McEvoy Company, treasurer of the Houston chapter; Penny; Lewis A. Thompson, assistant advertising manager, Hughes Tool Company, secretary; Colby, and Harry Heller, advertising manager of Reed Roller Bit Company, vice president. The board of directors included: Earl Brennan, Brennan-Brown Advertising Agency; Kenneth Fellows, Houston Natural Gas Company; Dick Yancy, Gray Tool Company; George Forristall, Brochstein's Incorporated, and Robert J. Koch, Morse Chain Company.



WEIGHT INDICATOR POINTS

THE SETTING SUN has nothing to do with the visibility you get when you install a Martin-Decker "Sealtite" Drilling Control. All you have to do is plug a line into the nearest light socket—and PRESTO! Whether in front of the driller or clear across the derrick floor, your "Sealtite" gauges are visible **at all times** with this built-in indirect illumination.

No other instrument can hold a candle to the "Sealtite" for **complete drilling control.** Constantly accurate readings 24 hours a day are only one feature among more than a dozen on the "Sealtite." Write for more data!

HOME OF THE WEIGHT INDICATOR

MARTIN DECKER CORP.

LONG BEACH, CALIFORNIA

SAN JOAQUIN VALLEY: A. F. McQUISTON, BAKERSFIELD, CALIFORNIA

MID-CONTINENT DISTRIBUTOR: REED ROLLER BIT COMPANY, HOUSTON, TEXAS

Bucyrus-Erie Company Announces Personnel Changes

Bucyrus-Erie Company, South Milwaukee, Wisconsin, recently announced a series of changes in its personnel, designed to give increasing responsibility to its younger men.

N. R. KNOX

N. R. Knox was elected president. He has been with the company 23 years. Upon leaving Harvard in 1920, he started work in the company's foundry as a special apprentice. His experience includes service as electric furnace melter, assistant to the foundry superintendent, foundry superintendent, general superintendent, works manager aand assistant to the vice president. He became vice president in charge of manufacturing in 1933.

W. W. Coleman, president for 32 years, was elected chairman of the board. George A. Morison, former vice-president, was elected vice chairman of the board. W. L. Litle was elected vice president, and will be in charge of the company's plants at Erie, Pennsylvania and Evansville, Indiana. N. A. McGrath was re-elected secretary and J. G. Miller, treasurer.

Appointed officers now include W. M. Bager, technical director; D. P. Eells, vice president with special assignments; P. H. Birckhead, vice president in charge of the sales department; R. W. Newberry, vice president in charge of the commercial department; C. K. Charlton, assistant to the president. The senior officers will continue to devote full time to the company's affairs, but the changes will give increasing responsibility to younger members of the organization.

Plant Uses Military Ritual to Speed Work

The Marmon-Herrington Company, Indianapolis, Indiana, has introduced the use of military ritual into its plant in an effort to impress workers with the seriousness of their jobs. Bugle calls replace whistles for beginning work and the various lunch periods, and retreat is heard as shifts end.

All aisles along production lines are now streets, courts and avenues named for America's heroes. MacArthur Avenue and General Wainwright Street intersect. Guadalcanal Street is a long production line. Roads on the plant grounds are similarly named. Over the main entrance gate is this slogan: "Through these gates march the soldiers of production."

Valve Grinding

The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, has issued a bulletin on valve-seat-grinding equipment for the maintenance of Cooper-Bessemer engines.

Care prolongs sucker rod life

Information supplied by "Oil Weekly"

Getting the longest possible service from sucker rods has always been important, economically. Today it is vital from any standpoint. The following suggestions are offered as an aid to longer rod life:

1. Open bundles with wire cutters, not with a hatchet or hammer, to avoid nicking rods.
2. Tail rods into derrick singly, and avoid bending. See that rod hanger is securely fastened.
3. Remove box and pin protectors with a wrench, never hammer them.
4. Do not hammer couplings.
5. Clean pin and box threads carefully, and do not over-lubricate before running in well. See that shoulders are free from grease.
6. Do not make up rods with badly damaged or rusty threads.
7. Before using wrench in making up, see that rod hangs straight in derrick, thus avoiding crossthreading.
8. Be sure that joints are tight, especially when rerunning rods. This will help prevent pin failures.
9. For breaking out frozen joints increase leverage on the tong handle instead of hammering to loosen the joint.
10. When string is pulled inspect all rods for defective joints, bending or crookedness. All rods failing to pass inspection should be laid aside for repairs.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Mo-lyb-den-um Company
500 Fifth Avenue • New York City

MOLY

From

WELL CONTROL *to* **FIRE CONTROL**

Mechanical control of the forces of nature or man's forces of war—is a matter of engineering training, skilled workmanship and adequate manufacturing facilities.

THE ORBIT GEARED MASTER VALVE

It is only natural that our 31 years of experience should be devoted to the War effort.

Therefore, for the duration, most of our manufacturing facilities for the manufacture of Orbit Valves have been converted to the production of vital equipment for our fighting forces.

●

YOUR ORBIT VALVES

will last for the duration. Meanwhile, if you have any questions regarding their care and maintenance, write us.

OIL WELL IMPROVEMENTS CO.

TULSA, OKLAHOMA

Men in the Industry's News

ELMER PATMAN, chief enforcement officer for the Texas Railroad Commission, has resigned to become an attorney for the Superior Oil Company at Houston, effective May 15. Patman has held most of the field hearings of the commission during recent months, and was responsible for the preparation of most of the regulations the commission issued. He also served as a trial lawyer in several suits in which the commission was involved. He is 35 years old, and a graduate of the National University Law School at Washington, D. C. In 1933, he went to Portland, Oregon, where he was in charge of the export-subsidy wheat movement to China. In 1936, he returned to Linden, Texas, where he remained in the private practice of law until he joined the commission in 1941.

W. C. MacMILLAN and R. L. Bosworth have been elected vice presidents of Continental Oil Company. MacMillan became manager of the company's production and drilling department east of the Rocky Mountains on May 1, succeeding J. G. Dyer, vice president, who resigned. Bosworth formerly New York office manager, was selected treasurer last year and now becomes vice president and treasurer. Other officers were reelected at the meeting, held in New York, and a 25-cent dividend was declared.

C. H. FROST, Gravimetric Surveys, Tulsa, spoke on "Gravity Measurement Surveys in Exploration," at the May 12 meeting of Engineers Club of Tulsa.

DON POLK, Carter Oil Company scout at Albion, Illinois, has been transferred to the company's geological department in Illinois basin territory. He was succeeded by Archie Walker of Cleveland, Oklahoma, a newcomer to the oil business.

H. H. KAPNER, Deep Rock Oil Corporation geologist, Tulsa, has been transferred to Mt. Vernon, Illinois.

H. M. TOWNSEND, a geologist for The Texas Company, has been transferred from Salem, Illinois, to Evansville, Indiana.

L. E. TROUT, geologist, has opened a general consulting office at 529 Waggoner Building, Wichita Falls, Texas.

HORACE E. COYL, Donald H. Smith, and W. J. Stebler have been elected vice presidents of General American Transportation Company, Chicago. Cyrus L. Philipp, vice president, will direct sales while continuing in charge of the operation of refrigerator cars. O. J. Parks has been appointed mechanical assistant to the vice president, and Edward J. Campbell has been appointed chief maintenance offcer. J. C. Acworth is assistant vice president.

J. L. MATHIEU, vice president of Schlumberger Well Surveying Corporation, addressed the May 6 meeting of the Houston Geological Society on "The Self Potential Dipmeter," explaining the method of measuring dip in wells and discussed its application to subsurface problems.

E. R. BRAN, production specialist for PAW, District 3, Houston, has resigned, effective May 15, to reenter the oil business for himself. Prior to joining PAW in 1941, he was an oil operator in Louisiana and Texas.

LAWRENCE S. REID, formerly associate professor of chemical engineering at the University of Oklahoma, has become assistant chief engineer for Southern Natural Gas Company, with office at the company's headquarters in Birmingham, Alabama. Reid has had considerable oilfield experience, having also been connected with Phillips Petroleum Company, Black, Sivalls & Bryson, and Lion Oil Refining Company.

ALEX W. McCOY, Deep Rock Oil Corporation, has been promoted from manager of the land and exploration department to vice president in charge of land and exploration.

L. B. JONES, secretary and treasurer of Mosher Steel Company, has been transferred from Houston to Dallas and placed in charge of sales in the latter office.

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